



NDLERF

Patron Offending and Intoxication in Night-Time Entertainment Districts (POINTED)

FINAL REPORT

A/Prof Peter Miller

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Patron Offending and Intoxication in Night-Time Entertainment Districts (POINTED)



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Contents

Acknowledgements.....	ix
Introduction	1
Patterns and correlates of other drug consumption	1
Alcohol consumption and energy drink consumption.....	2
Jurisdictional, geographic and cultural differences	3
The current study	3
Project objectives	3
Report structure	4
Study areas—local contexts	4
Patron Interviews.....	23
Methods.....	23
Results	25
Summary of trends	55
Venue Observations	57
Methods.....	57
Results	59
Single observation records	71
Summary and Discussion of Trends.....	77
Key Findings and Directions for policy, practice and research.....	86
References.....	89

Figures

Figure 1 Risk-based licensee fee structure.....	6
Figure 2 Locations of Melbourne interviews	8
Figure 3 Locations of Geelong interviews.....	11
Figure 4 Locations of Sydney interviews	17
Figure 5 Map of Wollongong entertainment precinct	19
Figure 6 Locations of Perth interviews.....	22
Figure 7 Age distribution of interviewees	25
Figure 8 Mean BAC level by time of day for each site.....	27
Figure 9 BAC levels for all sites per hour	28
Figure 10 BAC levels for Geelong per hour	29
Figure 11 BAC levels for Melbourne per hour.....	29

Figure 12 BAC levels for Perth per hour	30
Figure 13 BAC levels for Sydney per hour	30
Figure 14 BAC levels for Wollongong per hour	31
Figure 15 Self-reported main motivations for being out when interviewed (N=4003)	33
Figure 16 Locations where participants (N=2,297) reported pre-drinking.....	37
Figure 17 Self-reported main motivation for pre-drinking (n=3,534)	39
Figure 18 Mean energy drink consumption per hour across all sites.....	41
Figure 19 Mean energy drinks consumed for each city by hour of day	42
Figure 20 Percentage of interviewees consuming AED for each city by hour of day	42
Figure 21 Main reported motivations for mixing energy drinks and alcohol (N=490).....	43
Figure 22 Participants (N=622) reported last experiencing aggression with in the past three months.....	51
Figure 23 Percentage of total city observation records per month	60
Figure 24 Number of observations per hour of day	61
Figure 25 Patron intoxication trends by hour: no visible intoxication	63
Figure 26 Patron intoxication trends by hour: low visible intoxication	64
Figure 27 Patron intoxication trends by hour: moderate visible intoxication	64
Figure 28 Patron intoxication trends by hour: high visible intoxication.....	65
Figure 29 Frequency of intoxication rating per venue classification	65
Figure 32 Observed brand presence—total percentage of venues where product available	69
Figure 33 Percentage of hourly observations where illicit drug use was suspected.....	70
Figure 34 Percentage of venue patrons observed as affected by illicit substances (where observed)	70
Figure 35 Total 'n' of suspected observations for illicit substance use	71

Tables

Table 1 Description of alcohol-related interventions implemented in Geelong, Victoria.....	10
Table 2 Participant sex and age by interview type (brief/full)	25
Table 3 Participant sex and age by city/interview site	26
Table 4 Levels of intoxication among participants, by sex and city/interview site	27
Table 5 Levels of intoxication among participants, by age	27
Table 6 BAC readings grouped by level and city.....	28
Table 7 BAC readings by self-reported level of intoxication.....	31
Table 8 Current night out behaviours by sex and city/interview site	32
Table 9 Current night out behaviours by age	32
Table 10 Types of alcohol beverages consumed prior to being surveyed, by sex.....	33
Table 11 Interviewer-recorded signs of intoxication, by city/interview location.....	34

Table 12 BAC reading and self-reported indicators of intoxication, by any interviewer-recorded signs of intoxication (yes/no)	35
Table 13 BAC reading, by number of interviewer-recorded signs of intoxication (only: slurred speech, spilling drinks, staggering/falling over and glassy/red eyes).....	35
Table 14 Pre-drinking behaviours by sex, age and city/interview location (entire sample).....	36
Table 15 Pre-drinking behaviours by current night and risk behaviours/consumption patterns	38
Table 16 Energy drink consumption by sex, age and city/interview location (entire sample).....	40
Table 17 BAC readings by energy drink consumption behaviours	41
Table 18 Energy drink use and experience of harm in past three months	43
Table 19 Self-reported use of substances other than alcohol during current night out (prior to interview) among entire sample, by city/interview location	44
Table 20 Prevalence of self-reported use of substances other than alcohol during current night out (prior to interview) among participants who reported drug consumption, by sex.....	45
Table 21 Positive drug swab test results by sex and city/interview location	46
Table 22 Self-report versus drug swab results of pre-interview drug use	47
Table 23 Self-reported anticipated use of substances other than alcohol during the rest of the night, by sex	47
Table 24 Use of illicit drugs and reported aggressive and offending behaviour in the past three months	48
Table 25 Participants' self-reported methods of getting home.....	48
Table 26 Participants' self-rated driving ability and alcohol consumed, by BAC levels	49
Table 27 Self-reported involvement in aggression in the last three months, by sex, age and city/interview site ..	50
Table 28 Different types of aggression witnessed in the last three months by sex and city/interview location. ..	52
Table 29 Experience of alcohol-related harms and involvement in risk behaviours last three months, by sex and city/interview location	54
Table 30 City vs. venue classification distribution	59
Table 31 Venue classification vs. patron descriptors by hour	62
Table 32 Venue classification vs. patron intoxication indicators per hour.....	66
Table 33 Distribution of patron intoxication across availability of drink discounts (n= 898).....	68
Table 34 Distribution of patron intoxication across AED use popularity (n= 872)	69
Table 35 Groups of energy drink consumers observed by site	72
Table 36 Groups of energy drink consumers observed by time	72
Table 37 Types of alcohol combined with energy drinks	72
Table 38 Groups of drug users observed by site	73
Table 39 Groups of drug users observed by time.....	73
Table 40 Types of drugs consumed by groups.....	73
Table 41 Physical incidents observed by time	74
Table 42 Sexual incidents observed by time.....	75
Table 43 Verbal incidents observed by time	75

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Introduction

Risky drinking causes considerable community concern in Australia and internationally, particularly when it involves young people consuming alcohol in the night-time economy or NTE (Miller, et al., 2012). In Australia, one in four young people (aged between 15 and 24 years) reported that in the past year they had consumed alcohol, at levels associated with short-term harm, on a weekly to monthly basis. More than 40 percent of young people reported having consumed more than 20 standard drinks on a single occasion during that time (Chikritzhs & Pascal 2004; Victorian Drug and Alcohol Prevention Council 2010). This trend is concerning given that estimates indicate that up to 47 percent of alcohol-related deaths can be attributed to single sessions of heavy episodic drinking (Stockwell et al. 1998).

In 2004–05 the estimated cost of alcohol to the community was \$15.6 billion, including crime, violence, treatment costs, loss of productivity and premature deaths (Collins & Lapsley 2008). Alcohol consumption has been shown to increase the likelihood and extent of aggressive and violent behaviours and to reduce an individual's cognitive and verbal capacity to resolve conflict, thereby increasing the likelihood of involvement in arguments or fights (Australian Bureau of Statistics 2007). Furthermore, alcohol at or more than 0.05 blood alcohol concentration (BAC) significantly increases the potential for fatal car accidents (Drummer et al. 2003). For these reasons, alcohol places a significant burden on emergency services personnel, including police, paramedics and hospital staff.

Research has consistently shown that violence and harm in late-night entertainment areas peaks between midnight and 3 am. It is most frequent on Friday, Saturday and Sunday nights (Chikritzhs & Stockwell 2002, 2007; Ireland & Thommeny 1993). A number of issues have been identified that may exacerbate levels of short-term harm associated with risky drinking, including: excessive alcohol consumption at licensed premises, consumption in public areas, and a lack of transport and security in entertainment precincts (Graham & Homel 2008). Factors which increase risky drinking and associated harms in licensed premises include: patron demographics and mix; levels of comfort, boredom and intoxication; promotions encouraging rapid alcohol consumption; and the behaviour of security staff. Violence has also been shown to be associated with poor management and policy, lax police surveillance, lack of transport options for patrons, and inappropriate bureaucratic controls (Graham & Homel 2008; Homel et al. 2004; Hughes 2007).

While previous research has explored the role that factors such as transport, environment and security have on harms associated with heavy episodic drinking, little is known about how consumption practices affect harm. For example, it is not known what levels of BAC are associated with risky behaviour and experience of harm, nor which drinking practices (for example, pre-loading or consuming shots, energy drinks or 'alcopops') are associated with increased harm in the night-time environment. Further, it is also not known how duration of drinking episode, intoxication levels upon entering and leaving licensed venues and venue characteristics (ie venue type, venue closing time, venue capacity) impact on experiences of harm.

Patterns and correlates of other drug consumption

As with alcohol, reliable evidence on the prevalence of substance use within the night-time economy is lacking. Population survey and monitoring studies provide an indication of trends in the prevalence of illicit drug use in some populations, but there is limited research examining associations between illicit drug use and offending and harm in night-time entertainment districts. A recent Australian study has identified that only a small proportion (around 7%) of patrons entering nightclubs in two regional cities reported any form of drug use (Miller, et al., 2012). However, these data are limited by their geographically-specific focus on regional cities, and the absence of objective data to validate the quality of self-report.

Psychostimulants (ie ecstasy, methamphetamine and cocaine) are the most widely used illicit drugs within licensed leisure spaces (Australian Institute of Health and Welfare, 2011b; Sindich & Burns, 2010). The use

of these drugs increased steadily throughout the mid-to-late nineties in Australia (and elsewhere), and has remained relatively stable since 2001 (Australian Institute of Health and Welfare, 2011b; Home Office, 2012). Epidemiological and social research has documented that most users of illicit drugs are polydrug users (Jenkinson et al. 2004). However, drug research often focuses either on alcohol or illicit drugs, and only sometimes on the interaction between them. This is a potentially important area of study given that concurrent use of alcohol and other drugs can exacerbate both the risks and harms associated with any of these drugs when used in isolation, and poses particular challenges for venue management, regulators and policymakers.

Limited research exists into the potential harmfulness of the pharmacological and toxicological interactions between alcohol and psychostimulant drugs. However, a high percentage of both psychostimulant and alcohol-related deaths have been reported to relate to polydrug use (Allott & Redman 2006). When used together, alcohol and psychostimulants have a greater than additive effect on heart rate and blood levels, and can put the combined user at clinical risk of cardiotoxicity (Kaye & Darke 2004; Mokhlesi et al. 2004; Pennings et al. 2002). As well as posing immediate physical threats, polydrug use has been found to increase the likelihood of risk-taking behaviour, including unsafe sexual practices and drink/drug driving (Baker & Lee 2003; Kamieniecki et al. 1998; Minichiello et al. 2003; Riley et al. 2001).

A recent event-based analysis in Melbourne showed that almost one in five young psychostimulant users (19%) reported engaging in an argument or fight during their most recent session of use (typically with a peer from their close social network), around one in six participants (16%) had an accident of some sort (related to intoxication) or injured themselves, and almost one in three (29%) reported regretting decisions that they had made during the course of the session (Jenkinson et al. 2009). As such, illicit drug use places significant demand on emergency services personnel, law enforcement and venue operators.

While psychostimulants are the most widely used illicit drugs in the night-time economy, little is known about rates of illicit drug use and popular polydrug use combinations in this context. Further, no information is available about which substances (and polydrug combinations) are associated with engaging in risky behaviour and experiencing harm, or what forms of harm are caused by drug use.

Alcohol consumption and energy drink consumption

A recent and emerging consumption practice in Australia involves combining alcohol with energy drinks (AEDs). Prevalence data available from overseas indicates that 25 percent of American university students reported consuming AEDs in the past month (O'Brien et al. 2008a), and an Italian study showed that 57 percent of university students reported previously using AEDs with 36 percent doing so more than three times in the past month (Oteri et al. 2007). The only prevalence data available in Australia shows that 69 percent of regular ecstasy users surveyed as part of the Ecstasy and Related Drugs Reporting System (EDRS) had previously consumed AEDs. This sample reported consuming an average of three AEDs in their most recent session, exceeding the recommended intake of two energy drinks per day (Sindich & Burns 2010). These findings are not representative as they are limited by the illicit drug-using nature of the sample, and inadequately represent the popularity of AED use in Australia.

A small but growing body of research demonstrates that the combination of alcohol and energy drinks may be associated with a range of harms, although controversy surrounds this issue. Energy drinks enable wakefulness and alertness, which may mask the feelings of intoxication and lead to greater consumption of alcohol over a longer period of time. The potential consequences of this are alcohol poisoning, impaired judgment leading to accidents (eg stepping in front of traffic), poor decision making (eg driving while intoxicated), engaging in risky behaviour (eg risky sexual behaviour, violence) and experiencing more negative consequences (eg more severe hangover) (Brache & Stockwell, 2011; Ferreira, et al., 2006; Jones, et al., 2012; Marcziński & Fillmore, 2006; Miller, et al., 2011; O'Brien, et al., 2008a; Pennay, et al., 2011; Thombs, et al., 2010b). Clearly current gaps in the evidence base exist regarding the popularity, functions, contexts, effects and correlates of harms associated with AED use, despite the widespread consumption of these beverages in the night-time economy.

Jurisdictional, geographic and cultural differences

A small amount of Australian research has shown that rates of alcohol-related harm are not uniformly spread among geographical regions. They appear to be higher in regional rather than metropolitan areas. For example, rural and regional areas have markedly higher levels of hospital admissions for alcohol-related assault than metropolitan areas (Briscoe 2001; Chikritzhs et al. 2000). However, there is no Australian information on whether rates of drinking, patterns of consumption, harmful drinking practices, illicit drug use and energy drink consumption differ across jurisdictions, which might explain these differences in harm.

The current study

This study aims to address the significant gaps in evidence already identified. While information is available about the levels of risky drinking among young Australians at a population level, as well as national estimates of drug use, little is known about the drinking practices, drug use and harms experienced by young people in and around licensed venues. Little is also known about how behaviour and harms differ between location and types of venue. Without specific evidence of rates, patterns of consumption, behaviour and harms, the efforts of police and licensees to address intoxication and offending in licensed venues will continue to be undermined by ineffective policy. This study attempts to address these important questions, using a research design, which enabled researchers to capture data from consumers during an episode of alcohol and other drug use. This approach limited the potential for recall bias, and allowed the observation first-hand, of behaviour occurring in and around licensed venues.

Study design

This mixed methods cross-sectional study used two methods to collect data about consumers during an episode of alcohol and other drug use:

- short patron interviews with people entering or leaving licensed venues; and
- sessions of structured observation within licensed venues.

Project Objectives

The study investigated:

- the levels of intoxication of people in and around licensed venues;
- the types of substances being used by people before entering and while inside licensed venues;
- the relationship between time of evening, duration of drinking episode and level of intoxication, and harmful or risky behaviour;
- the relationship between licence type/trading hours and level of intoxication and harmful or risky behaviour;
- the relationship between consuming illicit drugs (or prescription drugs being used illegally); alcohol, and level of intoxication, and harmful or risky behaviour;
- the relationship between consuming energy drinks, alcohol and level of intoxication, and harmful or risky behaviour; and
- jurisdictional differences between alcohol consumption, substance use, energy drink use, levels of intoxication, and harmful or risky behaviour.

Report structure

The report's structure focuses on local context for the study locations, patron interviews, and structured observations within licensed venues.

Each section sets out its own methods, results and discussion. A final synthesis and summary chapter presents major findings across the study, chief themes arising from interviews and observations, and directions for policy, practice and research.

Study areas—local contexts

This study was conducted in the night-time entertainment districts of three metropolitan cities (Sydney, Melbourne and Perth) and two regional cities (Wollongong and Geelong) in Australia. These sites were chosen specifically to investigate jurisdictional differences in alcohol and other drug consumption patterns and intoxication, and related harms. Sydney, the capital of the state of New South Wales, and Melbourne, the capital of the state of Victoria, are the two largest cities in Australia, each with more than four million residents. They are located on the east coast of Australia and both are known for their vibrant night-time economies. Perth, the third metropolitan city in this study is on the West Australian coast. Perth is smaller and is not considered a busy international hub in the same way as Sydney and Melbourne. Perth is a beachside city with a population of around 1.74 million. Nevertheless, Perth is the capital of Western Australia and has a thriving nightlife. Wollongong is a regional city in New South Wales (population around 300,000) and Geelong is a regional city in Victoria (around 160,000). These are two of the largest regional cities in Australia and were chosen specifically to compare the differences between regional and metropolitan cities in the two largest states of Australia. Both cities have a small central business district with fewer than 50 licensed venues. This contrasts with the hundreds of venues in the central business districts of Sydney, Melbourne and Perth <<http://www.abs.gov.au>>.

Victoria

Victoria, located on the south-eastern coast of Australia, is the second smallest state on the mainland, but the second most populous, making it the nation's most densely-populated state. The two largest cities in Victoria, Melbourne and Geelong, are included in this study.

Victorian Night-Time Economy

Victoria has the most liberal liquor licensing regulations of all Australian states. This has been the case since 1987, when a new Liquor Control Act was passed in Victoria (Nieuwenhuysen 1986). This was an attempt to overhaul the strict licensing conditions that existed at the time and create a more 'civilised' drinking environment that encouraged a 'European style' of drinking (Chikritzhs 2009; Room 2010). The main recommendation of the Liquor Control Act was to simplify the Victorian licensing system by reducing the number of different types of licences and making them easier to obtain (Victorian Community Council Against Violence 1990). The number of liquor licensing categories in Victoria dropped from 29 to seven. In addition, trading laws were simplified, making it easier for licensees to be granted an 'extended hours' permit to increase ordinary trading hours. This change resulted in an increase in the availability of 24 hour licences in Victoria (Victorian Community Council Against Violence, 1990). The number of licences has risen dramatically in Victoria, from about 4,000 in 1986 to about 19,300 today (City of Melbourne 2010). Trading hours of licensed venues in Victoria are not restricted; they are determined in the initial licensing permit process, and licensees can (and sometimes do) apply for an extension of their trading hours at a later time. About 910 of the 19,300 licensed venues in Victoria are 'late-trading'; that is, venues that trade past 1 am (unpublished analyses of data from the Victorian Commission for Gambling and Liquor Regulation).

Victorian Regulatory Approach

Victoria Police

Regulatory approaches adopted in the context of the night-time economy differ between Melbourne and Geelong with the exception of state-based police laws and liquor licensing regulations. In Victoria, police have laws available to them to minimise harms in the night-time economy, such as 'being drunk in a public place', 'being drunk and disorderly in a public place' and 'being drunk and behaving in a riotous or disorderly manner'. These laws have differing levels of severity but all may result in the perpetrator being arrested and taken into custody (although are more often dealt with through on-the-spot fines). Since 2011 Victoria Police have had additional powers available to them. They now have the power to ban 'troublemakers' from identified trouble spots or designated areas in Melbourne. Police can ban patrons from these hotspots for up to 24 hours if the patron has committed an offence such as violent or disorderly behaviour, sexual offences, destruction of property or carrying a prohibited weapon. If these banning orders are breached, the patron may be banned from the area for up to 12 months. As an extension of this law, patrons can also be barred from a specific licensed venue for being drunk, violent or argumentative, or if someone in authority believes the patron poses a risk that someone will be harmed from their drinking. These barring orders can be issued by police, licensees or employees and can apply for up to one month in the first instance or six months for a second infringement. Police are also able to deliver large on-the-spot fines to people who are drunk in public or have breached a barring order. Fines can also be given for indecent language, offensive behaviour, consuming or supplying liquor on an unlicensed premises and failure to leave a venue when requested.

Risk-based licensing

In 2010 Victoria introduced a risk-based licensing structure. This means that all licensees with ongoing liquor licences are required to pay an annual licence renewal fee. A new risk-based fee structure was introduced for renewal fees in January 2011. Three steps are used to determine the annual licence renewal fee:

Step 1 – Determining the base fee

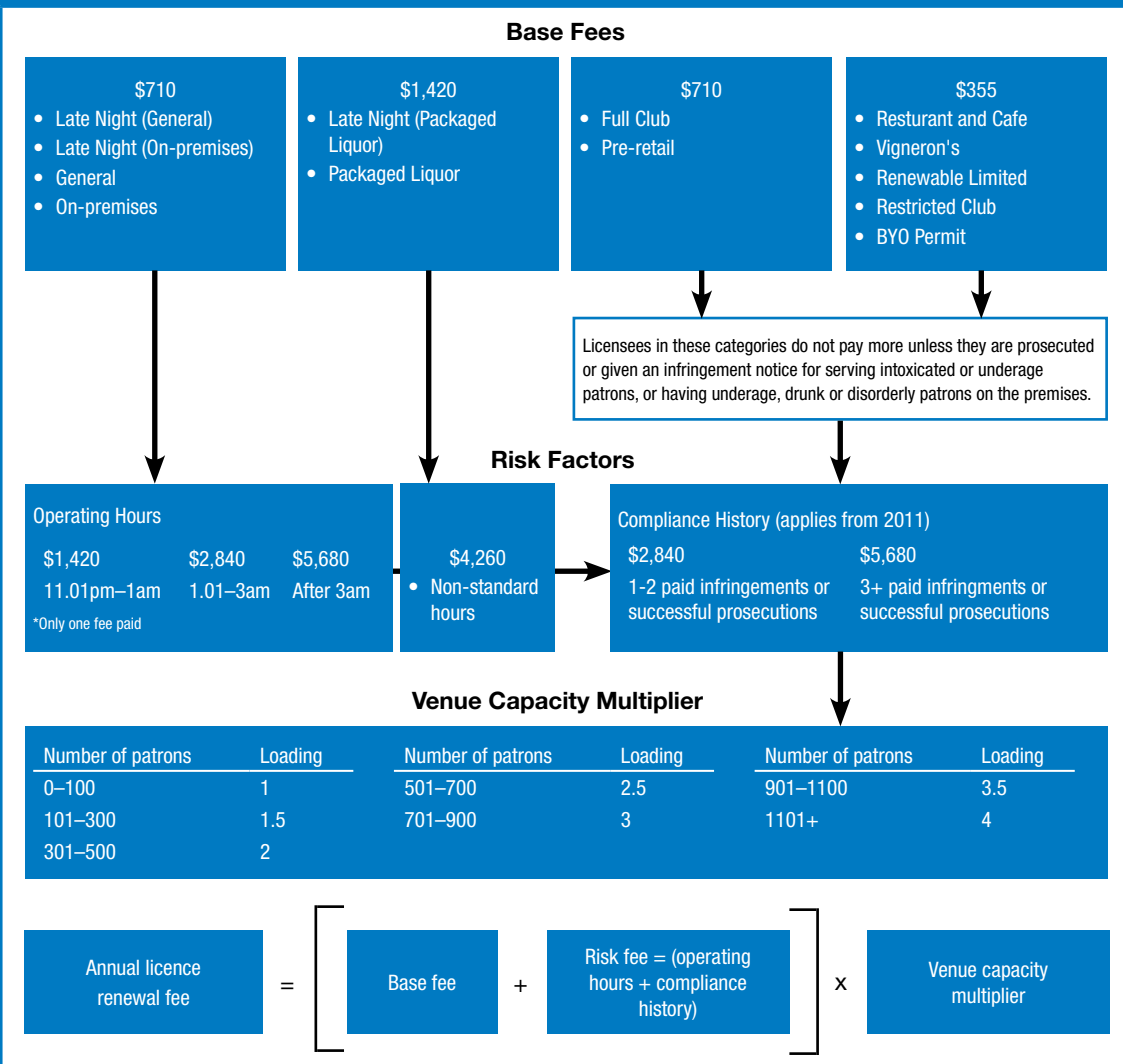
Step 2 – Determining risk fees=applicability

Step 3 – If risk fees apply, multiply the total of the base fee plus the risk fee by the venue capacity multiplier.

Figure 1 shows how fees are calculated. Risk fees apply for all licensees with a poor compliance history. The fees are determined by the number of paid infringements or successful prosecutions for the following offences: supplying alcohol to an intoxicated person; permitting a drunk or disorderly person on the premises; supplying alcohol to a minor, and permitting a minor on licensed premises. A licensee's compliance history between 1 January and 30 September 2010 determined the relevant compliance history risk fee payable for 1 January 2011, as follows: \$2,840 for one to two offences and \$5,860 for three or more. The total risk fee component of the annual licence renewal fee is the sum of the operating hours risk fee plus the compliance history risk fee:

Total risk fee = operating hours risk fee + compliance history risk fee

For example, a late night (general) licensee authorised to operate to 3 am and with two paid infringements for serving an intoxicated person, would pay a total risk fee of \$5,680—comprising an operating hours risk fee (\$2,840) plus a compliance history risk fee (\$2,840).

Figure 1 Risk-based licensee fee structure

(Source: Responsible Alcohol Victoria)

More recently, Victoria has introduced a five-star rating and demerit points system to provide licensees with stronger incentives to comply with liquor laws. The system rewards well-managed licensees who observe the law by giving them fee discounts for continued good practice. The demerit points system, on the other hand, penalises licensees who are found to breach liquor laws repeatedly. These licensees receive significant fines and increases in their liquor licence fees. In extreme cases they may have their liquor licence suspended.

Melbourne

Melbourne is the capital city of Victoria and the second most populous city in Australia after Sydney, with more than 4,150,000 residents. Seventy five percent of the Victorian population lives in Melbourne. In the 2000s Melbourne sustained the highest population increase and economic growth rate of any Australian capital city. In particular, the residential population of the central business district (CBD) of Melbourne increased by more than 100 percent during this time. Major urban renewal and cultural development has been occurring in Melbourne for some time. In 2011 and 2012 Melbourne was ranked the most liveable city in the world, in some part due to its vibrant night-time economy (ABS 2011; City of Melbourne 2010).

Melbourne Night-Time Economy

Most of Melbourne's liquor licences are located in the CBD: more than 1,000 licensed venues in about 36 km². Melbourne also has some inner-city suburbs that function as entertainment precincts, including the inner-northern, north-eastern and eastern suburbs of Carlton, Fitzroy, Collingwood and Richmond, and the inner-south, eastern and south-eastern suburbs of South Melbourne, South Yarra, Prahran, Hawthorn and St Kilda. As discussed, there are no limits on trading hours in Melbourne, but each new licensee negotiates their trading hours during the permit application process. Of the 910 late trading venues in Victoria, 254 are in the City of Melbourne and 449 are in the four inner city local government areas: City of Melbourne, City of Stonnington, City of Yarra and City of Port Phillip. Since 2008 a freeze prevents new 'late-trading' venues from being established in these four local government areas.

More than 330,000 people enter Melbourne's Central Business District (CBD) each Friday and Saturday night (City of Melbourne 2010; Eckersley & Reeder 2009). The proximity of Melbourne's venues to one another means that travelling on foot from venue to venue is viable, or at the very least, venues are a short tram or train ride, or inexpensive taxi fare away from one another. Given the deregulation of alcohol licensing in Victoria, many nightclubs are open until the early hours of the morning, which means that venues can be entered as late as 5 am. As a result, the streets of Melbourne's CBD are often populated by late-night revellers throughout Friday and Saturday nights, and Saturday and Sunday mornings.

Problems relating to the night-time economy

The 24-hour nature of Melbourne has recently received considerable media attention. The very reason it has been dubbed the most liveable city in the world is also the reason it receives negative attention. Although recognising that Melbourne is the only Australian city to have been designated a Safe Community by the World Health Organization, recent and frequent media reports present a picture of Melbourne as a dangerous and uninviting place fuelled by alcohol. Victorian police statistics indicate that the total number of offences in the City of Melbourne has been steadily declining over time; however, the level of intra-personal violence and antisocial behaviour in the city has risen in recent years. Between 2001 and 2008, the total number of antisocial behaviour offences in public space increased from 7,026 to 7,874, a rise of 12 percent (City of Melbourne 2010).

Melbourne Regulatory Strategies

Melbourne has a range of regulatory strategies in place to ensure patrons of the night-time economy can operate in a safe environment. As with other states, liquor accords operate in local government areas, which are held quarterly and bring together licensees, local council and police to discuss issues pertinent to the area and develop solutions to any problems that have arisen. Increasingly CCTV cameras are being placed around Melbourne (about 53 CCTV cameras are currently in Melbourne). Despite the absence of legislation around ID scanners, some venues in Melbourne have adopted this approach. All local government areas in Melbourne have adopted public drinking laws, which are the mandate of council, and vary in their provisions from one municipality to the next (some areas such as the CBD have total bans, while other areas have bans that operate only at night or in certain 'hotspots') (Pennay 2012; Pennay & Room 2012). Four 'Safe City' taxi ranks, which are monitored by security staff, operate in the Melbourne CBD from 11 pm to 5 am on Friday and Saturday nights.

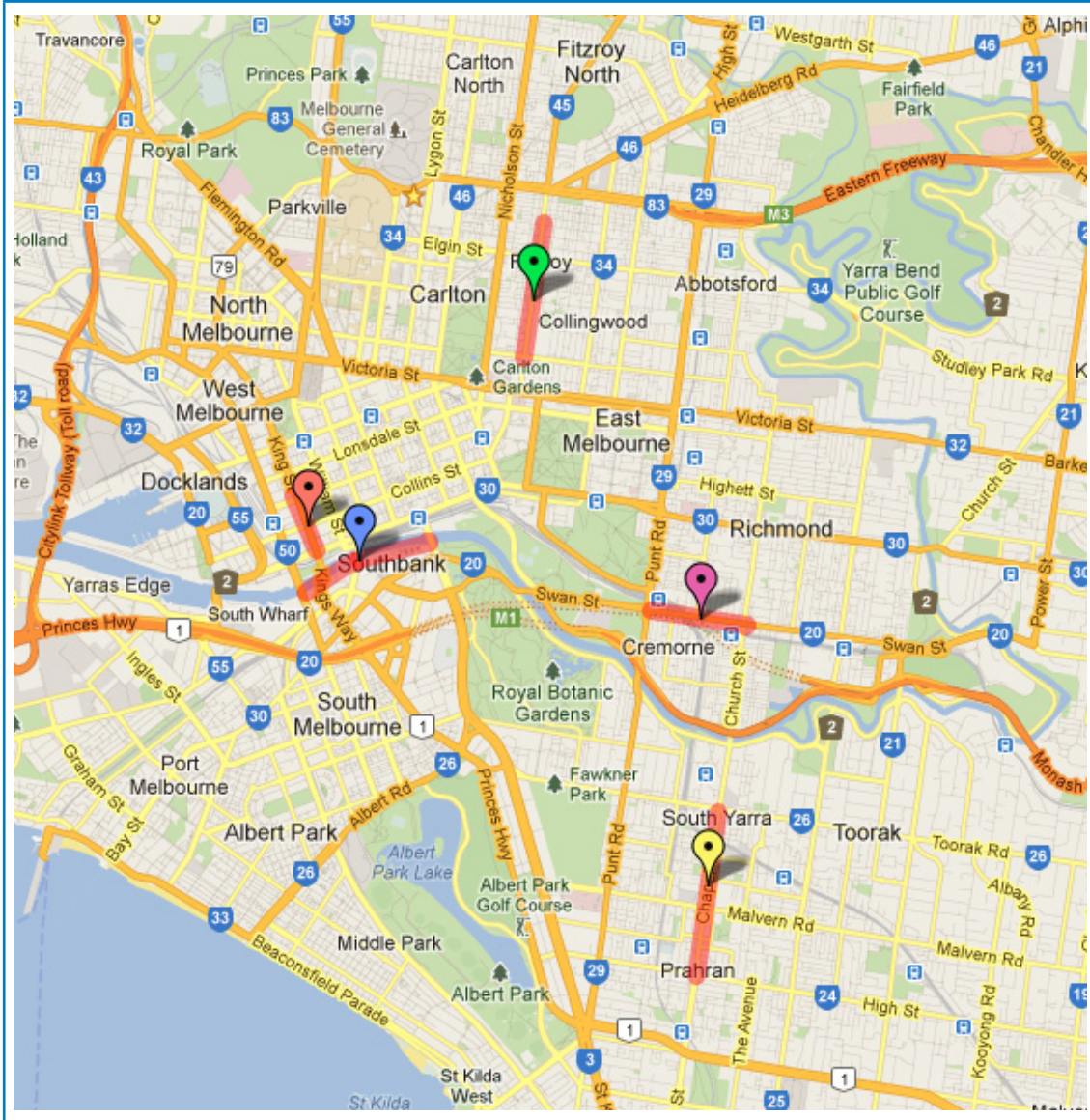
Melbourne Data Collection

Interviews

Patron interviews were conducted in Melbourne on fifteen separate occasions between December 2011 and June 2012. Interviews were predominantly undertaken between 10 pm and 2 am, with one late night session of interviews running from 1 am to 5 am. Interviews took place on Friday and Saturday nights in busy entertainment precincts across five CBD and inner-city sites:

- King Street, CBD—concentration of late-night and 24-hour trading nightclubs and gentleman's clubs (red area on Figure 2).
- Southbank and Crown Casino, CBD—concentration of restaurants, bars and pubs (blue area on Figure 2).
- Chapel Street, Prahran—concentration of late-night and 24-hour trading nightclubs (yellow area on Figure 2)
- Swan Street, Richmond—concentration of mega pubs and bars trading until 3 am, often attracting post-concert and post-sporting event crowds (pink area on Figure 2).
- Brunswick Street, Fitzroy—concentration of bars and clubs trading until 3 am (green area on Figure 2).

Figure 2 Locations of Melbourne interviews



These five locations were chosen as the five busiest hotspots for nightlife in Melbourne. Each attracts slightly different patronage. Chapel and King Streets attract a younger demographic looking for late-night trading, while Brunswick and Swan Streets attract a slightly older heavy-drinking crowd. Southbank and the Casino attract a broad range of patrons. Interviews were conducted with patrons lining up to enter venues as well as patrons leaving venues and walking to others.

Observations

In Melbourne pairs of fieldworkers ran 28 observation sessions between December 2011 and May 2012. Observations were carried out at 26 different venues:

- eight large mega-pubs with closing times between 1 and 3 am;
- nine boutique/cocktail bars with closing times between 1 and 5 am; and
- nine DJ-focussed nightclubs with closing times between 3 am and 24-hour trading.

Observations were made in nine venues in the Melbourne CBD, seven in Richmond, six in Fitzroy/Collingwood and four in Prahran. Observations took place between 9 pm and 7 am. Venues were selected to ensure a cross-section between large mega-pubs, niche bars and late-night clubs in the busiest nightlife areas in Melbourne.

Geelong

Geelong is a city of about 220,000 people with a growth rate of 1.1 percent per annum. Located 70 km from Melbourne, it is both a regional centre and a suburb of Melbourne, with more than 11,000 people commuting to the capital daily. A decline in employment has seen a raft of social problems over the past three decades, with alcohol and alcohol-related violence featuring prominently on the social landscape, although much of this has changed in the past decade through community action.

Geelong Night-Time Economy

Geelong has a concentration of licensed venues in central Geelong with venues closing at 1, 3, 5 and 7 am. This means high numbers of people move between venues at all times of the night. The central Geelong suburb has around 190 venues (197 in October 2012), with 23 general (hotel and late night) licences and nine packaged liquor outlets. At the time of writing this report, 12 venues had licences to trade after 1 am and one venue continued to trade normally to 7 am.

Geelong Regulatory and Harm Reduction Strategies

Over the past 15 years as many as 25 initiatives have been implemented in Geelong to improve safety in and around licensed venues (Armstrong-Rowe 2008). Many of the projects were conceptualised and implemented collaboratively by police, licensees, city officials and other stakeholders. Table 1 describes alcohol-related interventions implemented in Geelong, Victoria and outlines noteworthy interventions.

Table 1 Description of alcohol-related interventions implemented in Geelong, Victoria

Name of intervention	Date implemented	Description
Liquor Accord	1991	Agreed set of interventions and regular meetings between police, licensees and other stakeholders
Safe Taxi Rank	2006	Designated taxi rank staffed by security guards between 1 am and 6 am Saturday and Sunday mornings
Night-Watch Radio Program	March 2007	Connection of security staff via radio with relevant personnel
ID-scanners	October 2007	Matches ID images to photographs to detect fake IDs
Just Think	June 2008	Local celebrities endorsing 'safe' drinking patterns and reduced violence
Operation Nightlife 1	January 2007	Maximum police visibility during high-risk hours
Operation Nightlife 2	June 2009	Improved radio contact between police and licensees
Safe Streets Taskforce	December 2008	Increase police visibility
Operation Razon	April 2008	Undercover police at licensed venues
Final integration of ID scanners/ NWRP police scanner system	Nov 2009	Victoria Police, CoGG, Nightlife Association
Fine strategy	July 2010	Primary focus on using fines, rather than arrests, to deal with antisocial behaviour
So You Know campaign	Aug 2010	Awareness posters also implemented

A range of harm reduction strategies operates in Geelong. A liquor accord, in place in various forms since 1991 and revised in November 2007, has licensees, police and local council officers meeting regularly to discuss strategies. These include a shared banned patron list; agreed levels of security surveillance; installing ID scanners at 'high risk' licensed premises; encouraging the use of two-way radios, and; agreement that police be contacted immediately when problem patrons are identified.

In April 2007 the 'Night Watch' program was established enabling venues to let each other know when they were having difficulty with particular patrons. Hand-held radios linked security staff working at the front of late night venues, with the City Safe cameras.

In December 2007 owners of 'high risk' venues in Geelong installed ID scanners. These are programmed to recognise 154 different types of ID from around the world and can pick-out fake or altered IDs.

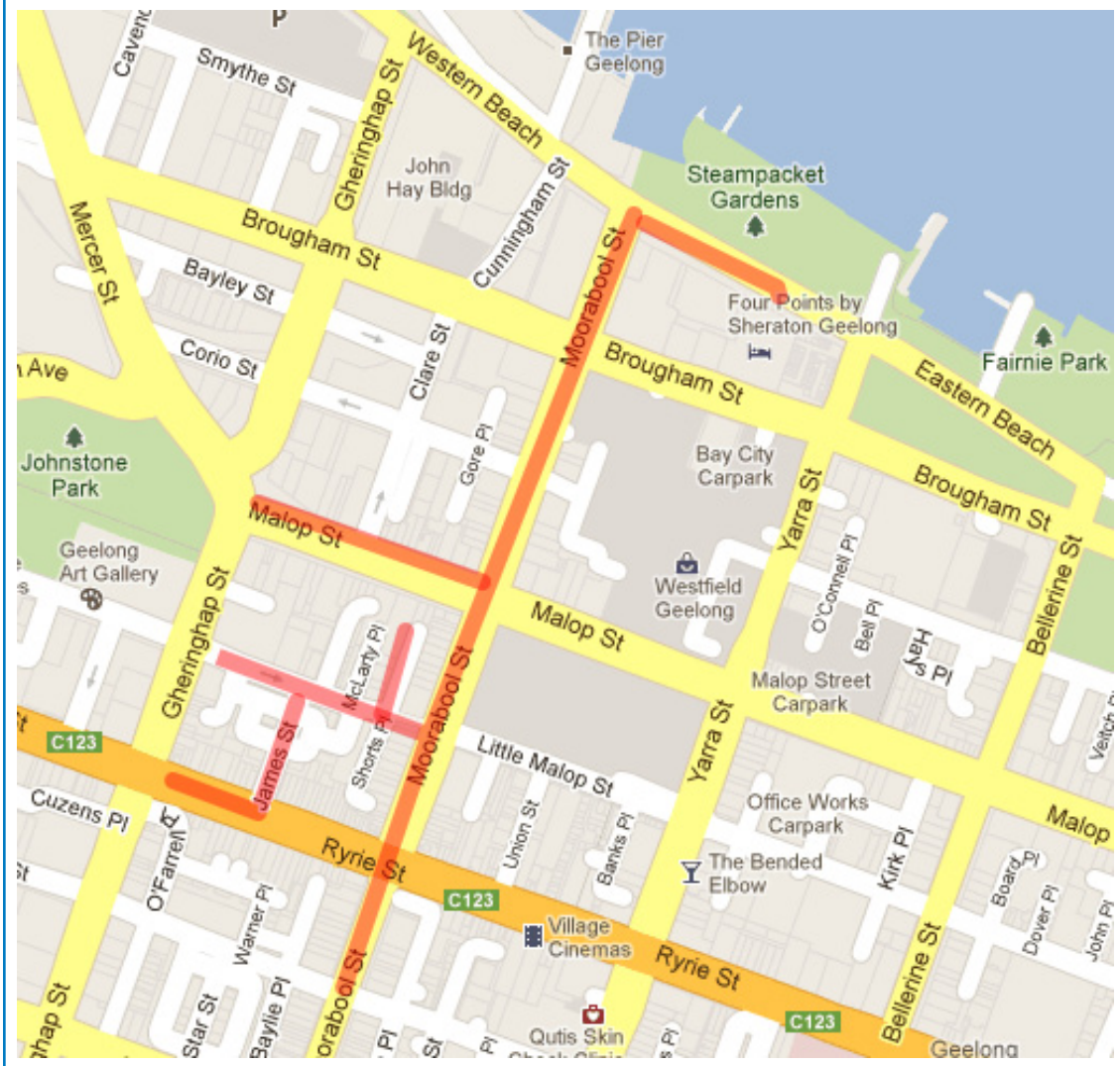
Lock-down and dry zone regulations implemented at a local law level prohibit drinking in public within the city of greater Geelong. In addition to this, Liquor Accord signatories agree to fixed lock-down periods prior to closing (ie not allowing entrance for 30 minutes before closing).

The City of Greater Geelong (CoGG) introduced a CCTV network across the central business district (CBD) in 2004 which has expanded to 26 cameras in 2012. CoGG also provides a supervised safe taxi rank in central Geelong between 1 am and 6 am on Saturday and Sunday mornings.

Geelong Data Collection

Interviews

Patron interviews were conducted in Geelong on 15 separate occasions between December 2011 and May 2012. Interviews were predominantly undertaken between 11 pm and 3 am, with one late-night session running from 1 am to 5 am. Interviews took place on Friday and Saturday nights in busy entertainment strips (Figure 3: marked as red lines) across the Geelong CBD:

Figure 3 Locations of Geelong interviews

These locations within the CBD were chosen as the busiest hotspots for nightlife in Geelong. Most of Geelong's busiest nightlife venues are concentrated within a four-block radius, or night-time entertainment district. Each location attracts slightly different patronage, although a large proportion of patrons attend multiple venues and shift between them at different stages of the night. Interviews were conducted with patrons lining up to enter venues as well as patrons leaving venues and walking to other venues. It was not unusual for the research team to re-encounter participants later in the night at other venues.

Observations

Pairs of fieldworkers recorded their observations at six different venues in Geelong between December 2011 and July 2012:

- two large pub-style venues with closing times between 1 and 3 am;
- one cocktail/shots bar with closing time between 1 and 5 am; and
- three DJ-focussed super-pubs/nightclubs with closing times between 3 am and 7 am.

All venues were located within the Geelong CBD (see Figure 3). Hollow map markers indicate venues that hosted interviews in the surrounding street, but were not targeted for observation. Observations took place between 10 pm and 7 am. Venues were selected to obtain a cross-section between large mega-pubs, niche bars and late-night clubs in the busiest nightlife areas in Geelong.

New South Wales

New South Wales (NSW), located on the eastern coast of Australia, is the third smallest state on the mainland, but is the most populous with 7,272,800 residents, representing 34.5 percent of the nation's population. Sydney, the capital of NSW, is the most populated city in NSW and Australia. It is also the country's central gateway and financial hub. Wollongong, 80 km south of Sydney in the Illawarra Region, is the third largest city in NSW, with a population of about 200,000. Both Sydney and Wollongong were included as sites in this project.

NSW Night-Time Economy

New South Wales, in line with other states around the country, has experienced a systematic deregulation of liquor licensing over the past three decades. Expanded nightlife has been promoted as a solution to stagnant manufacturing and industrial sectors that had left many cities and regional precincts bereft of economic activity. Subsequently, New South Wales has experienced a dramatic growth in the number of liquor licences in the state. In 2011, NSW had 15,115 liquor licences (Casino Liquor and Gaming Control Authority 2011b), equating to one licence per 470 residents (Foundation for Alcohol Research and Education 2012). While areas of Sydney's CBD have been subjected to a licensing 'freeze' since 2009, the number of liquor licences in the state has grown substantially. During the 2010–11 financial year 2,557 new licences were granted across the state. Sydney has the highest density of liquor licences with 2,087 (Casino Liquor and Gaming Control Authority 2011b). Apart from the above-mentioned restrictions in selected spaces within Sydney city, there are no fixed restrictions on the trading hours of licensed venues in New South Wales. These hours are determined during the initial licensing permit process, but can be extended at a later time by applying to the NSW Independent Liquor and Gaming Authority (ILGA).

NSW Regulatory Approach

In recent years, various local policies and strategies have been implemented in NSW to address alcohol-related harm. Many of these initiatives target specific local nightlife precincts and are supported by both government and non-government agencies. Some prominent examples include the Newcastle Crime Prevention Partnership, Newcastle City Council's 'Nightcare' project, NSW Police Community Safety Precinct Committee, the Kings Cross rapid response security team, various NSW Police Force campaigns specifically targeting alcohol-related offences, and local liquor accords which are common throughout many local government and nightlife districts in Sydney and regional centres.

Other strategies implemented at state level, include the following initiatives and regulatory mechanisms.

Hassle-Free Nights

'Hassle Free Nights' is a NSW Government plan that aims to reduce alcohol-related crime and antisocial behaviour across a number of the state's most prominent and problematic entertainment precincts. Five 'hotspots' were identified as key sites for the campaign, including Newcastle, Manly, Wollongong, Parramatta and Sydney CBD. The campaign was launched in March 2010 and is a joint initiative of the NSW Police Force, the NSW State Government, local government, licensed premises and local communities. It has involved the development of mandatory Precinct Liquor Accords (PLAs) and improved late-night transport options. It has also promoted the development of crowd-management plans in popular thoroughfares, and strengthened licensing conditions and regulations concerning violent venues (Casino Liquor and Gaming Control Authority 2011a).

High-risk venue restrictions

In 2008, and running for the duration of the POINTED project, the NSW Government announced a Liquor Amendment (Special Licence Condition) Regulation. This regulation was updated on 9 November 2011 by the

Liberal state government (the Liquor Amendment (3 Strikes) Bill (No 2) 2011) to incorporate a 'three strikes' policy concerning the regulation of licensed venues in New South Wales. The Director General of the NSW OLGR, using powers under *Liquor Act 2007*, was able to issue directions and impose conditions on licences to address serious problems caused by a venue or its patrons. Special licence conditions were imposed on 48 venues across NSW. The NSW Bureau of Crime Statistics and Research identified these 48 'high-risk' venues based on the high rates of police-recorded assaults linked to the premises. Subsequently, the listed venues were categorised into three levels based on the number of police-recorded assaults over a 12-month period, each of which had specific calibrated punishments/conditions:

Level 1 venues (19 or more recorded incidents):

- a mandatory 2 am lockout of patrons (except members of a registered club);
- cessation of alcohol service 30 minutes prior to close;
- no glass containers to be used after midnight;
- no shots, and drink limit restrictions after midnight;
- 10 minute alcohol sales time-out every hour after midnight or active distribution of water and/or food; and
- one or more additional security measure/s.

Level 2 venues (12 to 18 recorded incidents):

- cessation of alcohol services 30 minutes prior to close;
- no glass containers to be used after midnight; and
- 10 minute alcohol sales time-out every hour after midnight or active distribution of water and/or food.

Responsible Service of Alcohol (RSA) on the Frontline Training

A workshop was developed in 2010 by the NSW Office of Liquor Gaming and Racing (OLGR) to train bar and security staff. The workshop highlighted RSA strategies and security practices, and covered relevant sections of the *Liquor Act 2007* and industry guidelines regarding intoxication.

Turning 18: Drugs, Alcohol and Celebrating Safely

This was an educational campaign developed by the NSW Department of Education and Training to educate school-leavers on the dangers of alcohol and drug abuse and also the different laws governing behaviour in and around licensed premises.

'Take the hint. Call it a night, without the fight'

The 'Take the hint. Call it a night, without the fight' campaign was launched in November 2010 by the NSW Police Force via online media sharing website YouTube. The message, linked with the 'Hassle Free Nights' initiative (above), specifically targeted young revellers in the lead-up to summer 2010, as issues of alcohol-related violence and disorder have traditionally peaked in warmer months around the state. The online message promoted nightlife revellers to 'take responsibility for their actions' over the summer/Christmas period by highlighting the potential financial, health and criminal implications associated with public intoxication.

NSW Police Force

In NSW, police have a number of laws available to them to minimise risk and prevent public disorder in the NTE, including 'failure to quit', 'intoxication in a public place', 'offensive conduct' and new 'drunk and disorderly' offences introduced under the *Summary Offences Act 1988*. Police in New South Wales have also been given expanded 'move-on' powers to help disperse potentially problematic revellers. Whereas previously these directions were only applicable to groups of three or more, the powers can now be applied to individuals. Under Section 9 of the *Summary Offences Act 1988*, individuals who are given a direction to 'move-on' for 'being intoxicated and disorderly in a public place' can be asked to leave an area for up to six

hours. Failure to adhere to this direction constitutes an offence that generally results in a criminal infringement notice and on-the-spot fine of \$200. Added to these powers are provisions made under the *Liquor Act 2007* (s.77) that allow licensees, venue employees or police to refuse to admit or remove a person who is 'at the time intoxicated, violent, quarrelsome, or disorderly' from licensed premises. As in Victoria, as an extension of this law, patrons can also be barred from a specific licensed venue for being drunk, violent or argumentative or if someone in authority believes the patron poses a risk that someone will be harmed from their drinking. These 'barring orders' can be issued by police, licensees or employees and can apply for an indefinite period of time in NSW. Police are also able to deliver on-the-spot fines of \$550 to patrons who have breached a barring order or 'fail to quit' a licensed venue. Fines can also be given for indecent language, consuming or supplying liquor on an unlicensed premises, supplying minors with alcohol, as well as malicious damage and a range of drug-related offences (Wadds forthcoming).

Sydney

Sydney is the capital city of New South Wales and the most populous city in Australia, with more than 4,610,000 residents (Australian Bureau of Statistics 2011). Sixty-four percent of the New South Wales population live in Sydney. Sydney's success at hosting major events led to it being named as the 'top global city' at the inaugural 2010 International Festival and Events Association 'World Festival and Event City Awards'. This award is in part due to the success of a number of annual events that feature prominently in Sydney and contribute towards its vibrant NTE. Some of the more notable night-time events hosted annually in Sydney include the New Years Eve fireworks on Sydney Harbour, the Sydney Mardi Gras, Vivid Sydney and the Sydney Festival.

Sydney Night-Time Economy

Sydney's NTE has grown substantially in the past decade, particularly in and around the city. This growth has been promoted by a rapid deregulation of alcohol licensing by state and local governments. Currently, around 1,900 licensed premises are in the city of Sydney precinct, 20 percent of which are pubs and registered clubs. Most (70%) licensed venues in Sydney are restaurants, licensed cafes, small bars and karaoke venues (City of Sydney Council 2011).

The City of Sydney has a number of major precincts that function as entertainment and nightlife hubs, notably Kings Cross, Oxford Street, Darling Harbour, George Street and Circular Quay/the Rocks. All of these sites feature late-trading venues (until 3 am) and most have a number of 24-hour venues. A number of suburbs outside the city feature prominent nightlife precincts, including Newtown, Manly, Leichhardt, Parramatta and Cronulla. However, since July 2009, there has been a 'freeze' on all new liquor licences in four of Sydney's major nightlife precincts: Kings Cross, Oxford Street, Darlinghurst and CBD South (focussing mainly on lower George Street and its immediate surrounds). This 'freeze' prevents the granting of any new liquor licences, as well as any development applications concerning the extension of trading hours or increasing the size of a licensed premises. This action was deemed necessary to limit the number of patrons active within Sydney's nightlife 'hotspots' and also to allow the conclusion of a study into the cumulative impact of liquor outlet density on incidence of antisocial behaviour (Wadds forthcoming).

Significant crowds gather in Sydney's night-time leisure precincts after 11 pm on Friday and Saturday nights, in some places equalling daytime pedestrian peaks (City of Sydney Council 2011). Research funded by the City of Sydney and conducted between March and December 2010 found that between 5,400 and 7,564 people use city footpaths in key nightlife settings per hour (Parsons-Brinkerhoff 2011). The density of venues and proximity between the numerous nightlife precincts in the inner-city allow nightlife revellers to move between both venues and nightlife spaces with relative ease. Having said this, research conducted as part of the University of Western Sydney-based City After Dark Project revealed that 58 percent of people surveyed were not satisfied with public transport in the city at night and wanted more bus and rail services (Wadds forthcoming). Each precinct can be accessed by public transport until between midnight and 1 am when train services cease. Taxis are accessible after this time, but in limited numbers and availability.

Problems Relating to the Night-Time Economy

Sydney's NTE is a highly contentious and politicised environment. Recent decades have witnessed the major deregulation of drinking which has resulted in the proliferation of late-trading and 24-hour venues throughout the city. Originally seen as a facility through which the state and local economy could be stimulated, this process has increasingly been blamed for the rise of a problematic drinking culture, particularly related to Sydney youth. Frequent media reporting about the 'out of control' and 'belligerent' binge drinking culture, commonly associated with outbursts of alcohol-related violence and disorder, has kept debate surrounding Sydney nightlife and drinking cultures at the forefront of social and political debate. This debate has featured claims that Sydney's NTE requires greater regulation. However, media reporting contradicts crime statistics that reflect a decline and plateau of recorded assaults in and around key nightlife settings. Indeed, Kings Cross, often the focus of considerable negative press, has actually experienced a drop in recorded assaults over the past decade (287 recorded assaults in 2002 compared with 213 in 2012). This decline in assault crimes mirrors broader trends in Sydney (5,335 recorded assaults in 2002 and 4,926 in 2012) and NSW (70,978 recorded assaults in 2002 and 64,320 in 2012). Despite these declines, a number of major incidents in prominent Sydney nightspots have focussed media and political attention on problems associated with late-night leisure (Wadds forthcoming). For example, Sydney's NTE has recently received considerable negative media and political attention following the death of 18 year old Thomas Kelly in Kings Cross.

Sydney regulatory strategies

Sydney has a range of regulatory and legislative mechanisms to promote a vibrant and safe NTE. As in many other jurisdictions throughout the country, liquor accords operate in local government areas and are often specific to nightlife precincts. Liquor accord meetings are held monthly and usually consist of local licensees, local council representatives, relevant government officials (ie representatives from OLGR), as well as police. Accords ostensibly provide an avenue through which context-specific issues can be addressed, providing solutions that consider the needs/concerns of the local community.

In recent years, the City of Sydney Council has invested considerable resources into developing a comprehensive strategy and action plan that considers future directions for Sydney's NTE (City of Sydney Council 2011). The council has funded a number of research projects to examine the conditions of Sydney's NTE. In its most recent draft action plan (City of Sydney Council, 2011), the council pledges their support for 'anti-clustering' legislation that would prevent 'very large pubs and nightclubs being side by side, making room for smaller fine-grain shopping and dining spots in between the larger venues'. Decreasing the dominance of large venues and promoting the growth of more diverse night-leisure options is a core aim of the council's plan for Sydney's NTE. To this end, the council has maintained a licence 'freeze' throughout the most 'high-density' nightlife precincts since July 2009. This 'freeze' prevents the granting of any new liquor licences, as well as any development applications concerning the extension of trading hours or increasing the size of licensed premises (Wadds forthcoming).

The council has also adopted public drinking laws to regulate problematic public drinking and intoxication. The city features a large number of 'Alcohol Free Zones' and 'Alcohol Prohibited Areas' that are enforced by the NSW Police Force. Generally, Alcohol Free Zones prevent the consumption of alcohol 24-hours a day, seven days a week. The council also runs a significant network of CCTV cameras throughout the inner city. At present, it operates 87 cameras across the city, with six new fibre-optic CCTV systems being installed in Kings Cross following the death of Thomas Kelly in July 2012. Added to this network are the extensive surveillance networks operated by the NSW Roads and Traffic Authority (RTA), CityRail and Citybus that cover many city locations. Alongside the proliferation of CCTV is an increasing use of ID scanners in many pubs and nightclubs in the city. Indeed, a recent announcement from NSW Premier Barry O'Farrell indicated state government plans to install ID scanners in every pub, nightclub and strip-club in Kings Cross in an attempt to reduce violence in the area (Phillips 2012).

Sydney Data Collection

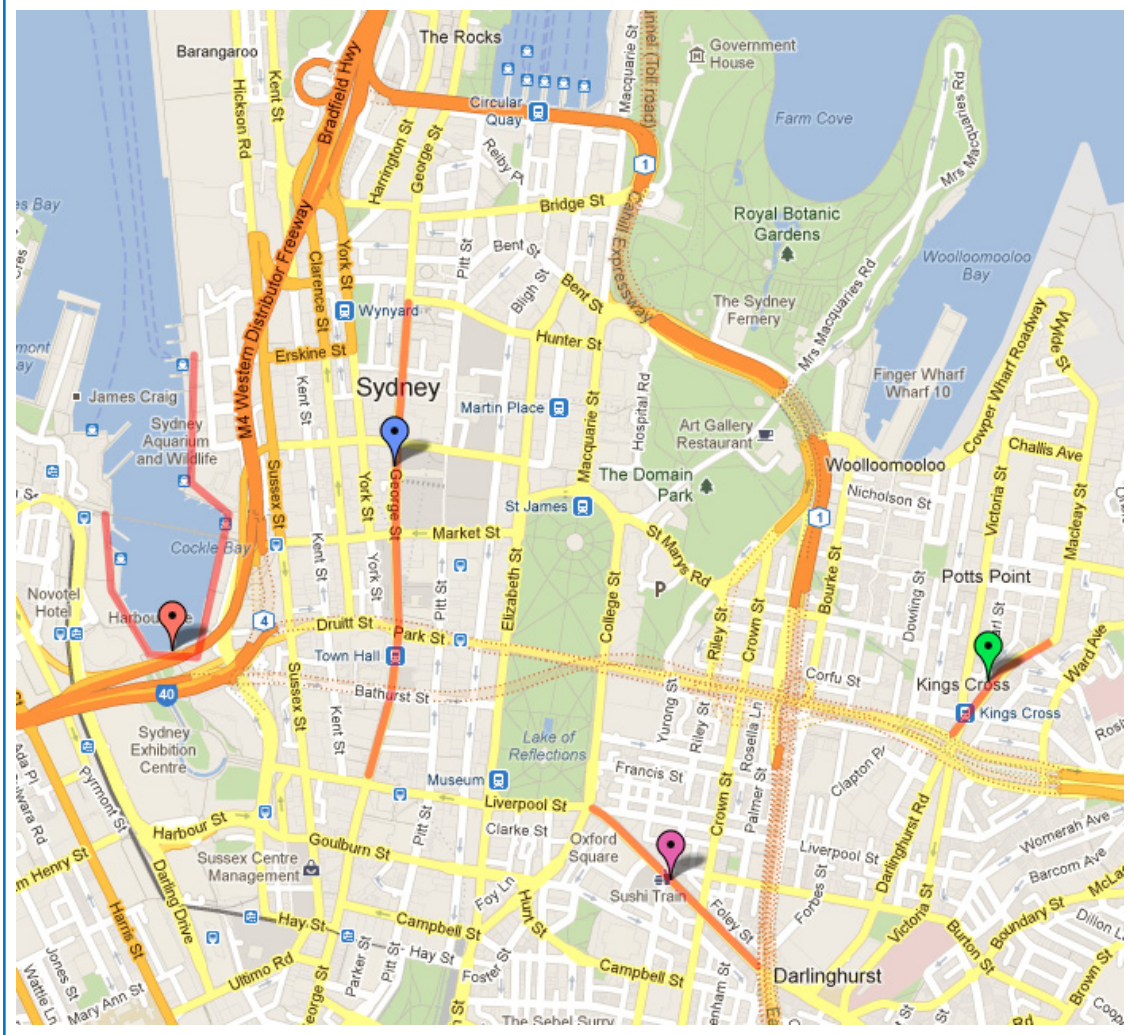
Interviews

Interviews with patrons were conducted in Sydney on 10 separate occasions between December 2011 and March 2012. They mostly took place between 10 pm and 2 am, with one late-night session of interviews running from 1 am to 5 am. Interviews were held on Friday and Saturday nights in busy entertainment precincts across four CBD and inner-city sites:

- Darling Harbour/Cockle Bay Foreshore, CBD—concentration of late-night restaurants, bars and nightclubs (red area on Figure 4);
- George Street/Town Hall, CBD—concentration of late-night and 24-hour pubs, bars and nightclubs (blue area on Figure 4);
- Kings Cross, Kings Cross—Sydney's most notorious and popular nightlife/red-light precinct. High concentration of late-night and 24-hour pubs, bars, nightclubs and gentleman's clubs (green area on Figure 4); and
- Oxford Street, Darlinghurst—high concentration of late-trading and 24-hour pubs, bars and nightclubs (pink area on Figure 4).

These four locations were chosen as the busiest hotspots for nightlife in Sydney. Each location attracts different patronage. Darling Harbour/Cockle Bay attract a slightly older demographic, while George Street has a younger demographic attracted to cheaper bars and nightclubs. Kings Cross and Oxford Street draw a broad range of patrons, with Oxford Street being historically linked with Sydney's gay, lesbian, bisexual and transgender community. Kings Cross is Sydney's most popular nightlife precinct and continues to serve as the city's red-light district as well as housing a high number of 24-hour bars and nightclubs.

Field workers interviewed patrons entering and leaving venues and using popular pedestrian thoroughfares.

Figure 4 Locations of Sydney interviews

Observations

Twenty observation sessions were conducted on five weekends between March and May 2012. Observations were undertaken in pairs at 12 different venues:

- five large mega-pubs with closing times between 1 and 5 am;
- three boutique/cocktail bars with closing times between 1 and 5 am; and
- four DJ-focused nightclubs with closing times between 3 am and 24-hour trading.

Observations were held in five venues in the Sydney CBD, five venues in Kings Cross and two venues in Darling Harbour/Cockle Bay. They took place between 10 pm and 3 am. Venues selected represented a cross-section of large, high capacity mega-pubs, niche or boutique bars, and late-trading nightclubs in the busiest nightlife areas in Sydney. Categorising these venues is somewhat problematic as some are not always static and often transform over the course of a night. For example, a venue may begin the night as a bar and later transforms into a nightclub.

Wollongong

Wollongong is a coastal city 80 km south of Sydney in the Illawarra region. With more than 201,000 residents it is the third largest city in New South Wales behind Sydney and Newcastle and the ninth largest city in Australia. Wollongong has industrial roots, and is still known and acknowledged as one of Australia's leading industrial centres in steel and other manufacturing industries. The region has also diversified its economic base, through tourism, education, health services, mining, retail information technology, hospitality, health and telecommunications (Wollongong City Council 2011, 2012)

Wollongong night-time economy

Most of Wollongong's 100 or so liquor licences are in the central business district (CBD), rather than surrounding suburbs. Most (70%) licensed venues are restaurants and licensed cafes, with about 10 percent being hotel licences and 10 percent trading after midnight. The city has five clubs and five packaged liquor outlets. The number of licences in the wider Wollongong local government area has risen from 250 in 2008–09 to 272 in 2010–11 (Casino Liquor and Gaming Control Authority 2011b). Wollongong Council is currently pushing to revitalise Wollongong nightlife by promoting more 'small bars', cafés, restaurants and art ventures to remove the perception that the city's CBD lacks diversity when it comes to nightlife. Although a small bar licence is relatively cheap at \$500, local operators are still finding it difficult as development and set-up costs are still very high.

The Wollongong CBD is the central entertainment district in Wollongong, notably sections of Corrimal, Crown and Keira streets. Each of these areas features a mixture of restaurants, cafés and late trading venues (3 am closing times). The Wollongong CBD attracts 8,000–10,000 pedestrians each day; with an average of 3,000, but up to 5,000, people in the CBD entertainment district on a Saturday night (Wollongong Community Cultural & Library Services Division 2012). The CBD is busiest on Wednesday, Friday and Saturday nights. Most Wednesday night visitors are university students attending pubs and nightclubs, with Friday and Saturday attracting a mixture of young people, university students and older people.

Problems relating to the night-time economy

Wollongong has historically been known for high levels of alcohol-fuelled violence. In Briscoe and Donnelly (2003), hotels, nightclubs and registered clubs in the Wollongong CBD were found to be the most common areas where alcohol-related incidents occurred. The timing of the incidents also reflects the closing time of venues in Wollongong with most assaults occurring between 9 pm and 3 am.

In 2011, 42.5 percent of assaults in Wollongong were linked with alcohol, including 43.6 percent (n=495) of non-domestic violence related assaults and 36.4 percent (n=235) of domestic violence related assaults. The peak time for assaults linked with alcohol is late Saturday night/early Sunday morning between midnight and 6 am, with the highest rates recorded in January. Although the rates of both these forms assault have decreased since 2011, offences linked with alcohol have remained stable and are still perceived as a major issue in Wollongong (Wollongong Community Cultural & Library Services Division 2012).

In 2011, CCTV footage from the Wollongong entertainment district was shown on all major television networks across Australia highlighting the nature and extent of alcohol-related violence. This led to a national outcry for change promoted via the online video-sharing site YouTube. <http://www.youtube.com/watch?v=R4ROOm_AvL4>.

Wollongong regulatory strategies

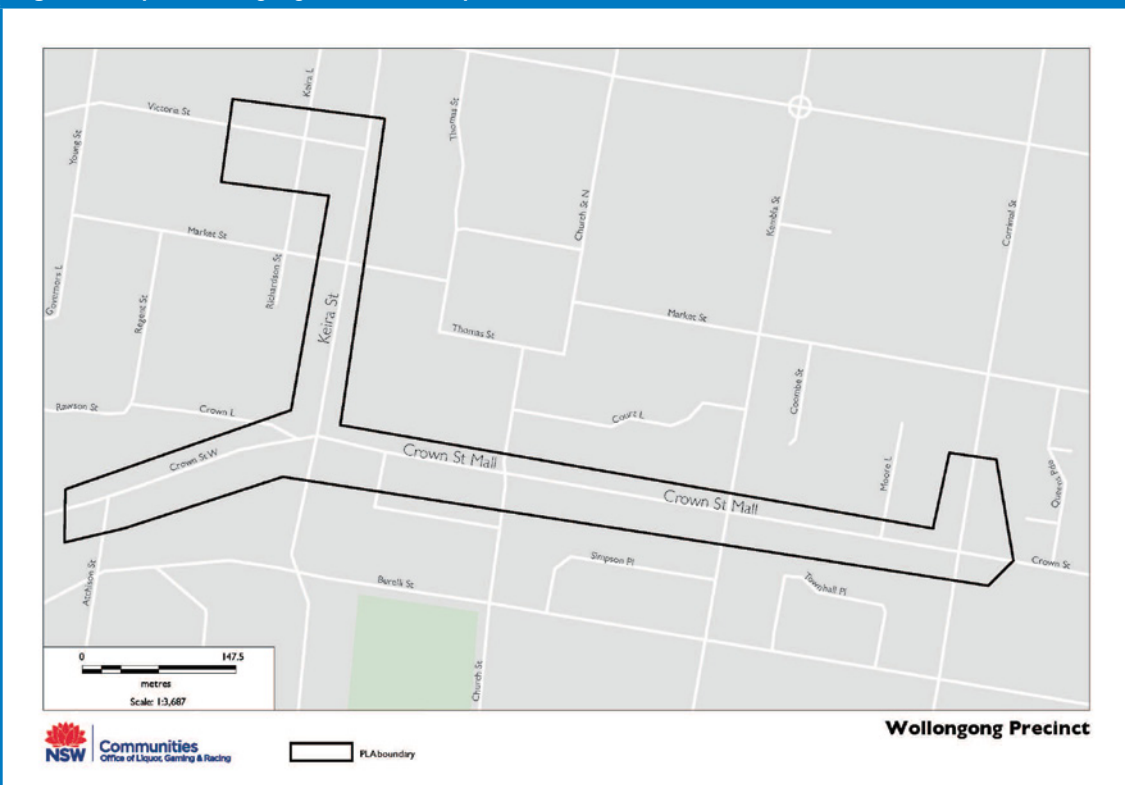
Wollongong has historically been known for high levels of alcohol-fuelled violence in the CBD on Wednesday through Sunday nights; however, recent interventions have seen reductions in recorded levels of violence. The Wollongong City Council released a number of initiatives in the Crime Prevention and Community Safety Plan 2007, including 'Don't Mix in the Mall' to tackle drug use, a drug and alcohol information exchange, a liquor accord to reduce alcohol-fuelled violence and a summer bus to provide transport during the busier summer months.

Wollongong data collection

Interviews

Patron interviews were conducted in the Wollongong CBD on ten separate occasions between December 2012 and April 2012. The locations were chosen in the busiest nightlife hotspots, with each location attracting different patronage depending on the night. Figure 5 shows the main area where data were collected, with many hotels, nightclubs and registered clubs located on Corrimal, Crown and Keira streets. The Crown Street Mall is also the main thoroughfare between venues in Wollongong. Interviews were conducted between 10 pm and 2 am mostly with patrons walking between venues or waiting in lines, although several venues allowed researchers to conduct interviews on the premises.

Figure 5 Map of Wollongong entertainment precinct



Observations

Fourteen observation sessions were undertaken between December 2011 and May 2012 at eight venues:

- one mega-pub with a closing time of midnight;
- one boutique/cocktail bar with a closing time of midnight;
- three DJ-focussed nightclubs with closing times between 2 and 3 am; and
- three Hotels/Clubs with closing times between 2 and 3 am.

Pairs of researchers conducted observations from Wednesday to Saturday nights between 8 pm and midnight or 10 pm and 2 am. The nights and venues were selected to provide a cross-section of the patronage of each premise.

Western Australia

Western Australia is the largest state in Australia with a population of about 2.3 million. Most people live in the state's south-western corner.

Western Australian Regulatory Approach

The Western Australian night-time economy has stricter regulations than its Eastern counterparts. Hotels, taverns and bars are permitted to trade until midnight from Monday to Saturday and until 10 pm on Sundays. Nightclubs are able to trade until 5 am from Monday to Saturday and until midnight on Sundays. However, many venues in Perth have successfully applied for extended trading permits. Most taverns and bars observed for this study closed later than midnight. Researchers observed that some venues voluntarily enforced a 'lockout' system (not permitting patrons to enter or re-enter the premise) up to two hours before closing.

In 2011, the following conditions were imposed on all venues in inner city entertainment areas under section 64 of the 1988 Western Australia Liquor Control Act (WA Department of Racing, Gaming and Liquor):

- From 1 am until the close of trading, no liquor to be sold or supplied for consumption on the premises in any of the following ways: in any vessels with a measurement capacity exceeding 750 ml, except vessels containing premixed drinks (eg RTDs) which shall not exceed 375 ml; in non-standard measures of spirits (ie no more than 50 ml of spirits permitted in any vessel).
- Licensee prohibited from selling and supplying beverages in such a way that would encourage rapid consumption of liquor (eg but not limited to, unadulterated spirits or liqueur in a shot glass); or drinks known as 'laybacks', 'shots', 'shooters', 'test tubes', 'jelly shots', 'blasters' or 'bombs' or any other emotive title.
- No liquor to be supplied mixed with energy drinks after midnight. For the purposes of this condition 'energy drinks' has the same meaning as formulated caffeinated beverage within the Australia New Zealand Food Standards Code with a composition of 145 mg/L of caffeine or greater.
- After midnight, persons prohibited from entering or re-entering the licensed premises 30 minutes prior to the close of trading prescribed on the licence or permit.

Western Australia Police

In Western Australia police have a range of laws to help them manage patron behaviour in the night-time economy. They relate to enforcement regarding under-age drinking, the sale of liquor to drunken patrons, drinking in unlicensed places and making sure that licensees are adhering to their liquor licence. Liquor accords also operate in Western Australia, as they do in other states. Public drunkenness and drunk and disorderly laws do not apply in Western Australia—however, it is illegal to drink alcohol in public, to sell alcohol to a drunk person, to allow drunkenness on a licensed premise, to help someone who is drunk to obtain alcohol, and it is permissible for licensees to refuse entry or eject drunk or disorderly patrons from their venue.

Perth

Perth, the fifth and final site included in this study, is the capital city of Western Australia. It is the fourth most populous city in Australia, with an estimated 1.74 million residents, which is more than 75 percent of the state's population. Over the past 10 years Perth has experienced significant economic and planning activity. The number of establishments (across all planning use categories) in Perth increased by 6.7 percent between 2001 and 2007 and the number of people employed in Perth increased by 11.6 percent over the same period (City of Perth 2009).

Perth Night-Time Economy

Perth CBD primarily functions as an office district, although it contains a substantial number of licensed venues, mostly along Murray Street. The suburb of Perth (which includes the CBD) had 181 active liquor licences in March 2013 including 56 hotels/taverns, 39 restaurants, 11 small bars and 7 nightclubs (WA Department of Racing Gaming and Liquor, 2013). Northbridge, located just north of the CBD, is Perth's busiest entertainment precinct. The resident population of Northbridge is fairly low (2,416 in 2006), but the

population can increase to more than 15,000 people on weekends. This includes people shopping, dining at restaurants and drinking in licensed venues (Cozens & Grieve 2011). Northbridge had 93 active liquor licences in March 2013 including 10 hotels/taverns, 48 restaurants, 5 small bars and 11 nightclubs (WA Department of Racing Gaming and Liquor, 2013).

Problems Relating to the Night-Time Economy

Western Australian newspapers portray Northbridge as a violent place after dark and cite the excessive consumption of alcohol and other drugs as a contributing cause (Cozens & Grieve 2011). Over a five-year period between 2005 and 2009 the number of offences against the person in Northbridge increased by 71 percent. This included a significant concentration of these offences (75%) between Friday and Sunday, and peaking between 10 pm and 3 am. In particular, these offences were found to correspond with the closing time of licensed venues (Hughes & Thompson 2009). Late night public transport out of Northbridge is infrequent. The latest trains on Friday night depart from Perth at 2.15am. On Saturday nights, the trains depart at 2.15am and 4am. No connecting bus services operate at these times (Transperth, 2013). Also, there is a well-documented shortage of taxis in Perth, especially for patrons away from the main taxi ranks. This has been posed as a potential explanatory factor for crimes against the person after the closing times of licensed venues (Cozens & Grieve 2011), although police statistics also show that alcohol is a common factor in offences during these times”.

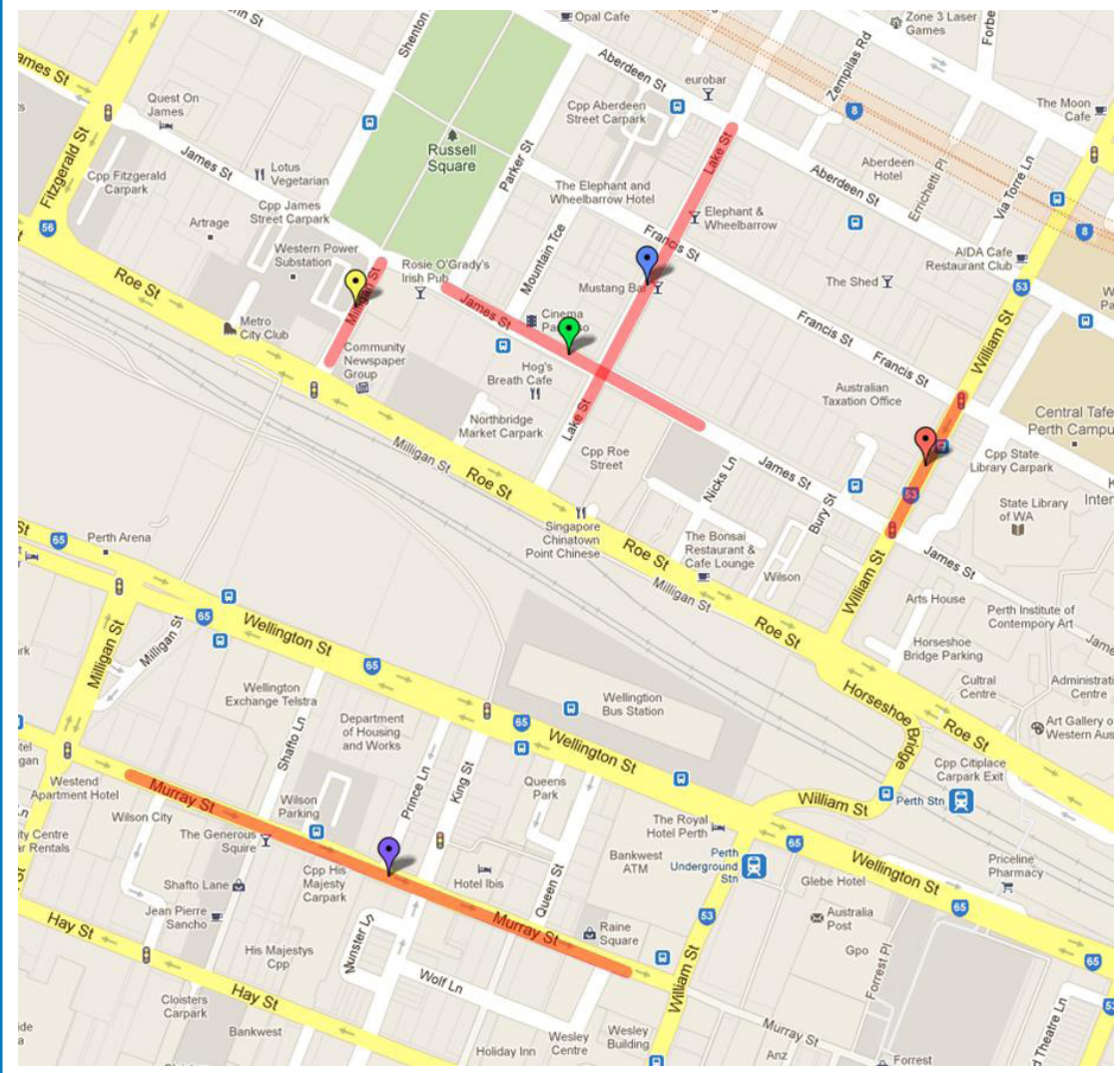
Perth data collection

Interviews

Patrons were interviewed on eleven separate occasions between January and May 2012 in two inner city entertainment districts of Perth: the CBD and Northbridge. The area covers about 3 km².

Interviews were generally conducted between 10 pm and 2 am on Saturday nights, with one late night session running from 1 am to 5 am. Figure 6 highlights the areas where most interviews took place. Patrons were approached when in line outside venues, leaving venues, walking between venues, outside fast food restaurants and waiting for taxis.

- Murray Street, Perth City (purple marker)
- William Street, Northbridge (red marker)
- James Street, Northbridge (green marker)
- Lake Street, Northbridge (blue marker)
- Milligan Street, Northbridge (yellow marker)

Figure 6 Locations of Perth interviews

Observations

Fieldworkers completed 120 hours of observations at venues in the Perth CBD and Northbridge. Observers worked in teams of either two or three and made their observations between 10 pm and 2 am at 12 different venues:

- five large mega-pubs with closing times at 2 am;
- three boutique/cocktail bars with closing times at 2 am; and
- four DJ-focussed nightclubs with closing times at 5 am.

Selected venues provide a cross-section of large mega-pubs, niche bars and late-night clubs in the busiest nightlife areas of Perth.

Patron Interviews

Studies of night-time economies around the world are increasingly using brief surveys with patrons either inside or outside licensed venues (Forsyth 2008, 2010; Hughes 2007; Voas et al. 2006), although the methods used remain novel. Voas and colleagues (2006) labelled such interviews 'portal studies' and proposed that, to be appropriate for measuring alcohol and other drug use, the environment must present three components:

- be, at least theoretically, a venue associated with an increased risk of AOD consumption;
- exist in a location that permits intercepting and assessing respondents before entering or leaving a venue; and
- have respondents who enter and exit during a sufficient span of time to permit brief interviews and testing.

They also highlight a number of advantages to the method over traditional telephone or household surveys. These include reduced recall bias, allowing survey teams to collect more objective data and also to observe the environments.

Methods

This study was designed to be a systematic random sample (selecting every third person) of all people attending night-time entertainment districts in five major Australian cities. Patron interviews were conducted in busy thoroughfares in each city, as well as with individuals queuing to enter venues and leaving venues (with consent from venue operators). Researchers worked in groups of six or more (Miller, et al., 2011) in these public thoroughfares and outside selected licensed venues (up to six venues each night). Each team had a team leader responsible for liaising with venue staff, carrying support equipment and overseeing team operations and safety. All interviewers wore easily identifiable clothing from their relevant institution.

Data collection occurred approximately fortnightly in each city on a Friday or Saturday night. Brief structured interviews and breathalyser tests were undertaken with about 7,000 patrons of licensed venues across five cities over six months. Data collection occurred during Australia's warmer months (November 2011–June 2012). Interviews were normally conducted between 10 pm and 3 am, but sometimes ran as late as 5 am.

Once participants agreed to be interviewed they were given a business card with a web address <<http://www.deakin.edu.au/pointed>> and contact details of the study investigators and ethics committee if they wanted to know more about the study or be informed of study findings. The interview questions were developed using Tap Forms software and stored on iPod Touch or iPhone devices.

In Geelong and Melbourne only, a randomly selected sub-sample (about every fifth person) was asked if they were willing to undergo a swab for the presence of other drugs (all responses were recorded to allow for the calculation of response rates). Results from the drug tests were recorded in the interview file and used to understand the reliability of our self-reported data. Drug tests were not able to provide a measure of impairment (as they only tested for the presence or absence of a drug). Testing required one non-invasive scrape of the tongue and results were generally identified within two minutes. Immediately following the test testing kits were placed into a bag with other swabs so that they could not be linked to an individual. Tests were not useful to police because the chain of evidence could not be guaranteed by the officer and tests required adhering strictly to guarantee valid results, which police would not be able to ensure. Further, interviewers were instructed to shake any drug tests (thereby invalidating results) if the results were requested by anyone other than members of the research team.

Interview Schedule

The patron interview had four sections:

1. Interviewee demographics—including gender, year of birth, postcode and occupation.
2. Current night out—involving questions about the night so far, how many hours they had been ‘going’ for, where they had been, their reason for going out, the alcohol types and quantity they had consumed (in standard drinks, which is 10 g of ethanol in Australia), their energy drink consumption (with and without alcohol), their engagement in pre-loading, their use of illicit drugs, and their perceived level of intoxication. Their BAC reading was also recorded.
3. Aggression/offending/alcohol-related consequences—involving questions about their witness of, or involvement in, verbal, physical or sexual aggression during the three months prior to interview; the role that alcohol and other drug use played in these incidents of aggression, personal injury or accidents; and engagement in other offending during that time (participants were able to identify how recently and how often events had occurred).
4. Intentions for the rest of the night—including how long they anticipated being out, how many more drinks they intended to consume, how many energy drinks (with or without alcohol) they intended to consume, their intentions around drug use for the rest of the night, how they planned to get home, their self-rated ability to drive and their plans for the rest of the evening. Participants were also asked how typical this night had been compared with their general routine.

Brief interviews

Following early data collection, researchers developed a brief interview schedule to be used with people who were moving or in queues that were moving quickly. Only core questions were retained from the full interview schedule, along with breathalyser tests and drug swabs. All of the key elements described above were covered in the brief interview. In addition, all interviewer information, such as intoxication rating, signs of intoxication and general comments were still recorded.

The study protocol was adopted so that if people had not agreed to a full five-minute interview, they were then asked if they would be able to answer seven questions instead. Brief interviews took about three minutes and were found to greatly increase interviewers’ ability to engage people not interested in doing the full interview and those in fast-moving situations who would have normally been lost.

Data analysis

The data collected from the surveys were analysed based on frequency counts. Group differences (such as different venues, time periods or differences between sites) were explored using both bi-variate (chi-square) and multivariate statistical methods (logistic regression) to adjust for socio-demographic and geographic differences. Fisher’s exact test was used when bivariate outcomes were infrequent ($n < 5$). The Kruskal-Wallis test was used to examine variations between categorical variables with more than two levels across non-parametric continuous variables.

Limitations

Although portal or patron interviews have substantial benefits in terms of investigating people who visit NTE districts, a number of limitations should be noted. Firstly, such surveys do not represent all people who attend licensed venues. Secondly, as potential participants are in the middle of a night out, interviews are necessarily kept short and are not suitable for in-depth questions. Thirdly, such interviews were conducted within a comparatively public environment, and therefore were not highly personal. Finally, there was no way to ensure participants were telling the truth.

Results

Sample characteristics

Of the 7,340 individuals approached to participate in the study, 6,804 agreed to be interviewed—a response rate of 93 percent. Most (62.1%, $n=4,227$) participated in the ‘full’ interview, while 2,577 (37.9%) responded to the brief interview. Participants of the brief interview were significantly more likely to be male ($\chi^2=44.15$, $p<0.001$) and younger (based on median split; $z=14.41$, $p<0.001$; Table 2).

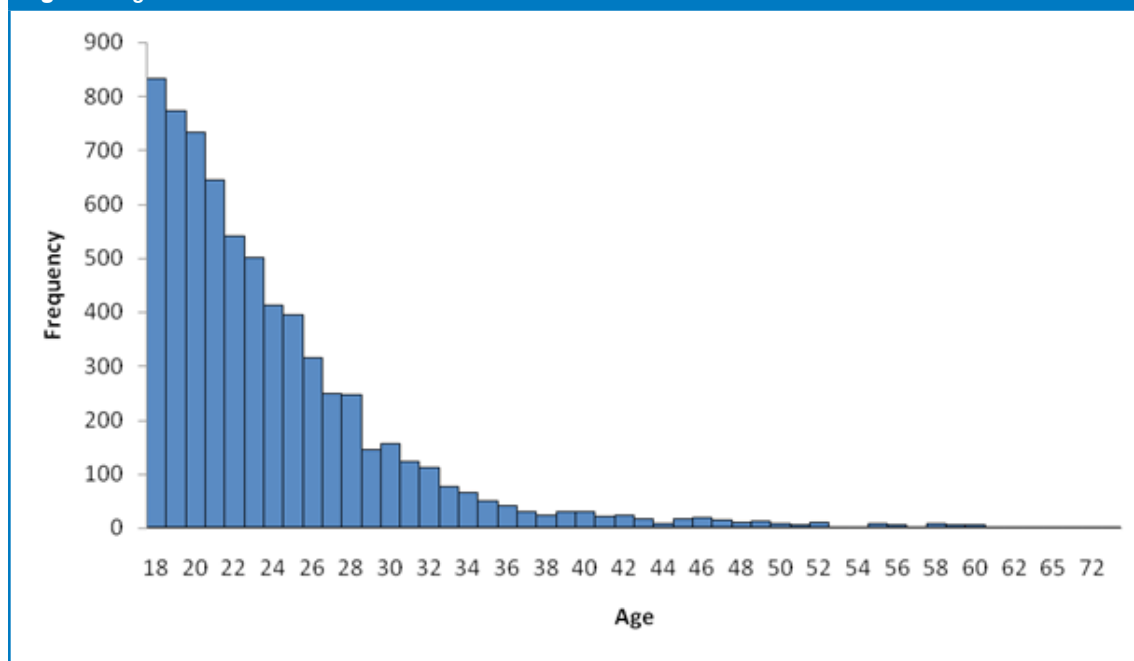
Table 2 Participant sex and age by interview type (brief/full)

	TOTAL	Brief N=2,577	Full N=4,227
Male, n (%) [*]	n=6,762 4,156 (61)	1,713 (66)	n=4,185 2,443 (58)
Median age (range) [*]	n=6,726 22 (18-73)	n=2,564 21 (18-60)	n=4,162 23 (18-73)

^{*}Missing gender data for 42 respondents of the full interview; missing age data for 78 respondents

More than half (61%) of the overall sample was male, with a median age of 22 years (range 18–73). Male respondents were generally older than females ($p<0.001$). Figure 7 shows the age distribution of interviewees.

Figure 7 Age distribution of interviewees



Participant age and sex differed slightly between sites (Table 3).

Table 3 Participant sex and age by city/interview site

	TOTAL	Geelong N=1,260	Melbourne N=1,913	Perth N=1,244	Sydney N=1,543	Wollongong N=724
Male, n (%) [*]	n=6,762					
	4,156 (61)	743 (59)	1,192 (62)	799 (64)	904 (59)	449 (62)
Median age (range) [*] (years)	n=6,76					
	22 (18–73)	21(18–52)	24 (18–72)	22 (18–61)	22 (18–73)	23 (18–65)

^{*}Missing location data for 81 respondents; missing gender data for 42 respondents of the full interview; missing age data for 78 respondents

Current Night Out

This section reports on the behaviours of interviewees on the night they were interviewed.

Levels of intoxication (self-report and BAC reading)

For self-reported ratings of intoxication, despite identical medians and ranges, on average, male participants who had consumed any alcohol prior to interview reported feeling significantly more intoxicated than female participants ($z=-5.67$, $p<0.001$; Table 4). This accords with a significantly higher average blood alcohol content (BAC; grams of alcohol in every 100 mL of blood) reading among male participants compared with female participants ($z=-8.16$, $p<0.001$).

The level of self-reported intoxication and BAC reading correlated positively ($r=0.55$, $p<0.001$); that is, people who reported greater subjective levels of intoxication recorded higher BAC readings (Table 7). However, self-reported intoxication varied significantly between the different interview sites ($\chi^2=69.79$, $p<0.001$) and BAC readings ($\chi^2=239.20$, $p<0.001$). Although there was a significant negative correlation between age and self-rated levels of intoxication ($r=-0.06$, $p<0.001$); that is, self-rated intoxication levels decreased significantly with increased age, there was a significant positive correlation between BAC reading and age ($r=0.03$, $p=0.017$), meaning that, overall, BAC readings increased significantly with age. In other words, older participants were generally more intoxicated yet rated themselves as less intoxicated.

Figure 8 shows the mean BAC levels for each city throughout the night. A clear pattern of increasing BAC levels across all cities is apparent, with Melbourne and Perth showing the highest mean BAC levels at 4 am. Data after 3 am for all cities were only collected on one or two nights from about 100 interviews at each site. Figure 9 shows the trends for all sites by BAC level groups: 0.000, 0.001 to 0.05 (sober to slightly intoxicated), 0.051 to 0.10 (moderately intoxicated) and more than 0.10 (heavily intoxicated). The data demonstrate clear trends of increasing intoxication and decreasing sobriety throughout the night. Of significance is the finding that across the five sites, the proportion of people heavily intoxicated increased from 16 percent of people interviewed at 10 pm to 37 percent at 4 am. Figure 10 to Figure 14 report the grouped BAC levels for each city and show subtle differences between them. Heavy and moderate intoxication increased although the proportion of people who were sober or still under the drink-driving limit (though not necessarily sober) decreased.

Table 4 Levels of intoxication among participants, by sex and city/interview site

Self-reported behaviours	TOTAL	Male	Female	Geelong	Melbourne	Perth	Sydney	Wollongong
How intoxicated do you feel tonight (0–10)?*	n=5,354 4 (0–10)	n=3,297 4 (0–10)	n=2,035 4 (0–10)	n=1,065 5 (0–10)	n=1,294 4 (0–10)	n=1,074 4 (0–10)	n=1,188 4 (0–10)	n=671 4 (0–10)
Median rating (range)								
BAC reading median (range)	n=6,557 0.054 (0–0.35)	n=4,032 0.059 (0–0.34)	n=2,489 0.046 (0.00–0.35)	n=1,235 0.067 (0–0.23)	n=1,890 0.048 (0–0.33)	n=1,185 0.066 (0–0.29)	n=1,683 0.033 (0–0.35)	n=699 0.066 (0–0.28)

*Of those who reported any alcohol consumption prior to interview (pre-drinking and/or after 'going out'/attending licensed venues)

Table 5 Levels of intoxication among participants, by age

Self-reported behaviours	TOTAL	Age group				
		18–19	20–24	25–29	30–39	40+
How intoxicated do you feel tonight (0–10)?*	n=5,354 4 (0–10)	n=1,565 4 (0–10)	n=2,633 4 (0–10)	n=1,183 4 (0–10)	n=601 4 (0–10)	n=202 3 (0–10)
Median rating (range)						
BAC reading, median (range)	n=6,557 0.054 (0–0.35)	n=1,552 0.048 (0–0.34)	n=2,739 0.056 (0–0.35)	n=1,302 0.056 (0–0.35)	n=678 0.060 (0–0.33)	n=225 0.041 (0–0.35)

*Of those who reported any alcohol consumption prior to interview (pre-drinking and/or after 'going out'/attending licensed venues)

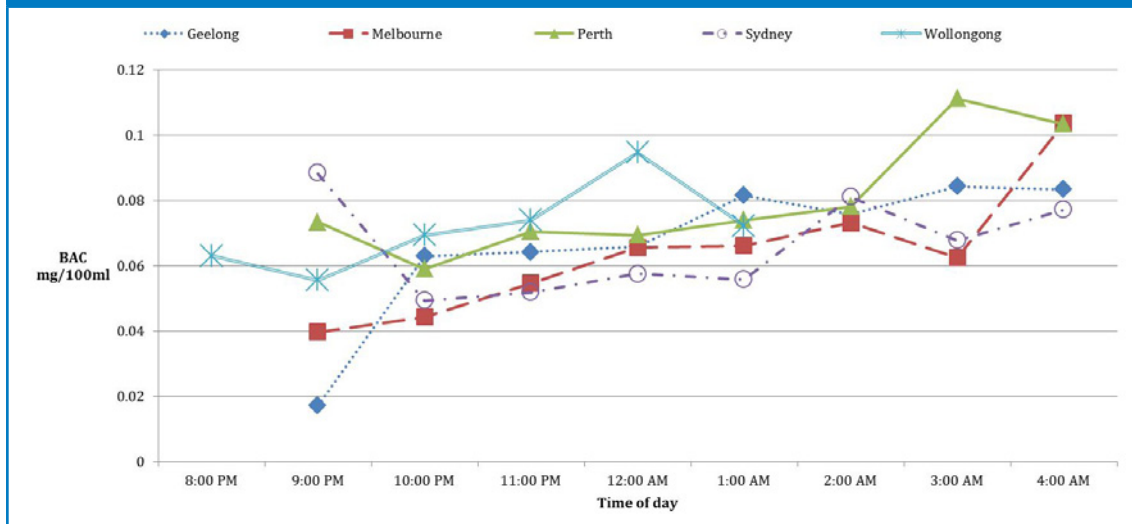
Figure 8 Mean BAC level by time of day for each site

Table 6 BAC readings grouped by level and city

Location		0	0.001 to 0.05	0.051 to 0.10	Greater than 0.10	Total
Geelong	Count	210	253	398	342	1,203
	% within interview city/location	17.5	21	33.1	28.4	100
Melbourne	Count	446	518	503	381	1,848
	%	24.1	28	27.2	20.6	100
Perth	Count	206	252	396	314	1,168
	%	17.6	21.6	33.9	26.9	100
Sydney	Count	550	448	381	304	1,683
	%	32.7	26.6	22.6	18.1	100
Wollongong	Count	93	172	238	181	684
	%	13.6	25.1	34.8	26.5	100
TOTAL	Count	1,505	1,643	1,916	1,522	6,586
	%	22.9	24.9	29.1	23.1	100

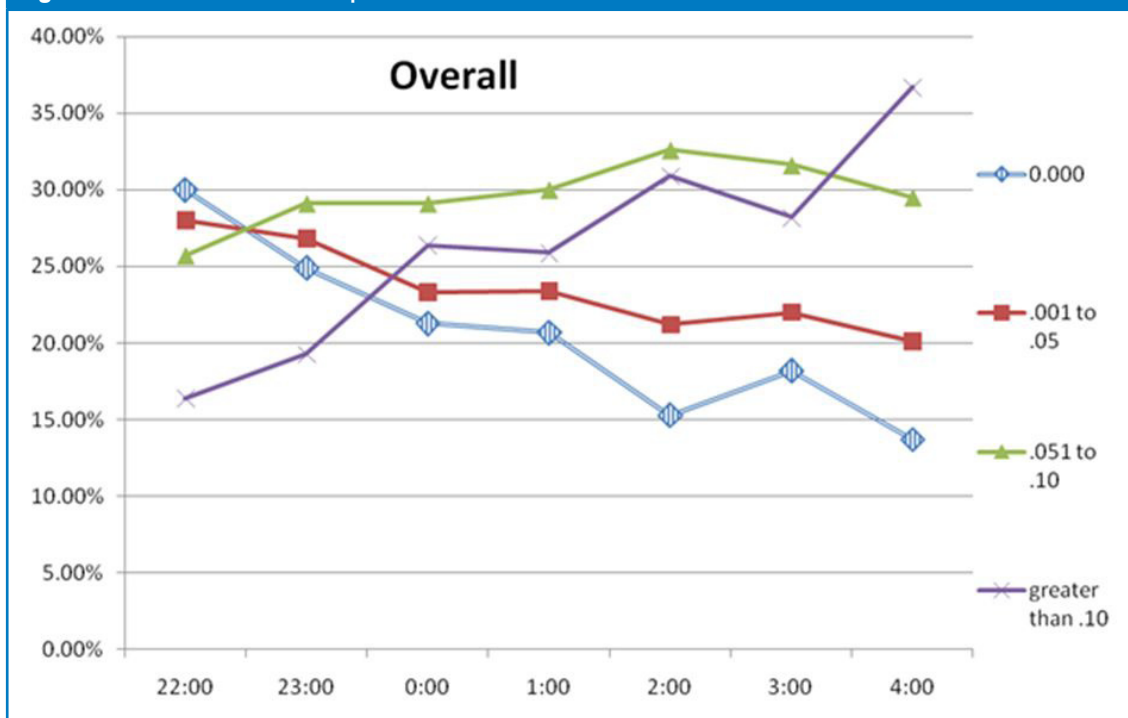
Figure 9 BAC levels for all sites per hour

Figure 10 BAC levels for Geelong per hour

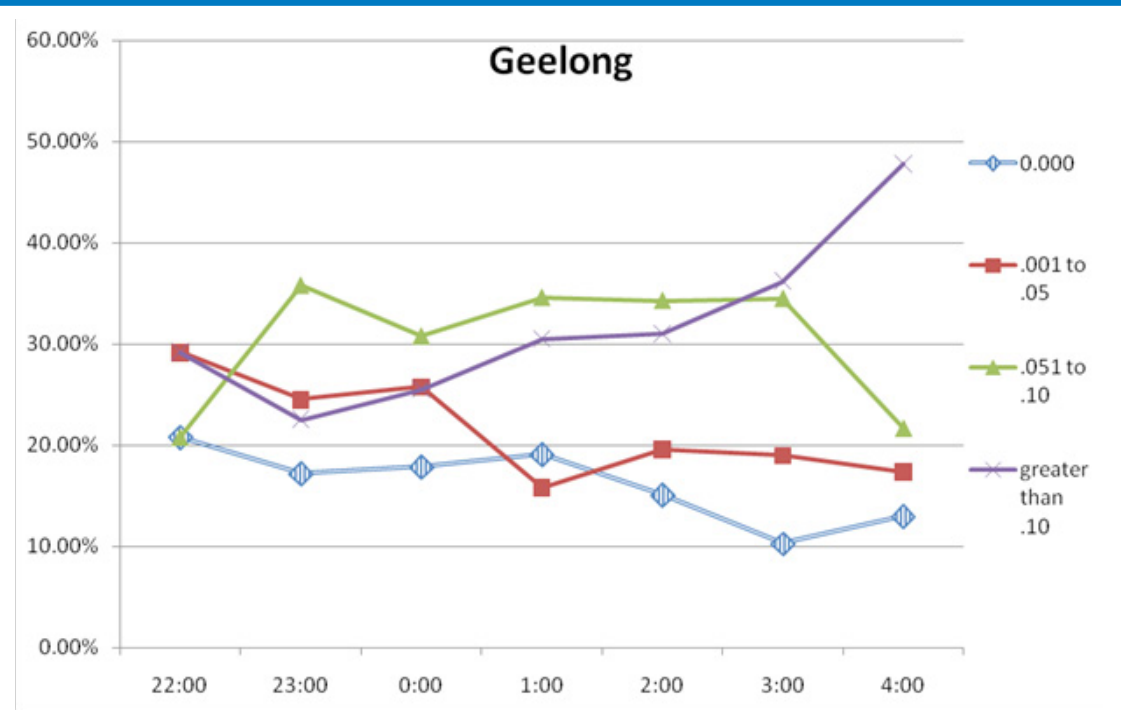


Figure 11 BAC levels for Melbourne per hour

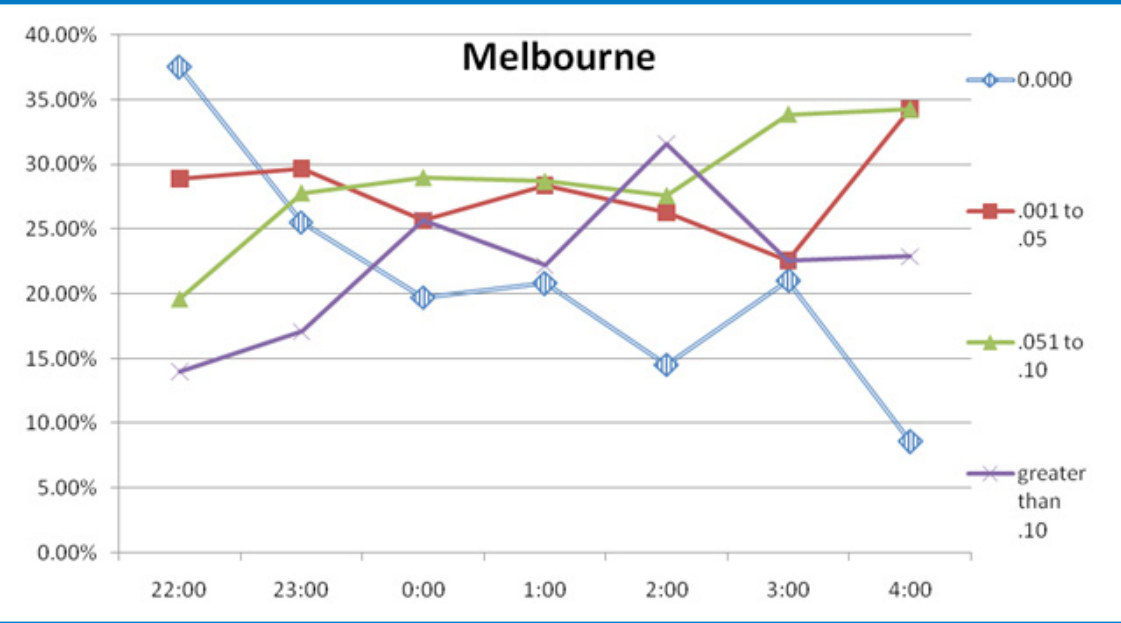


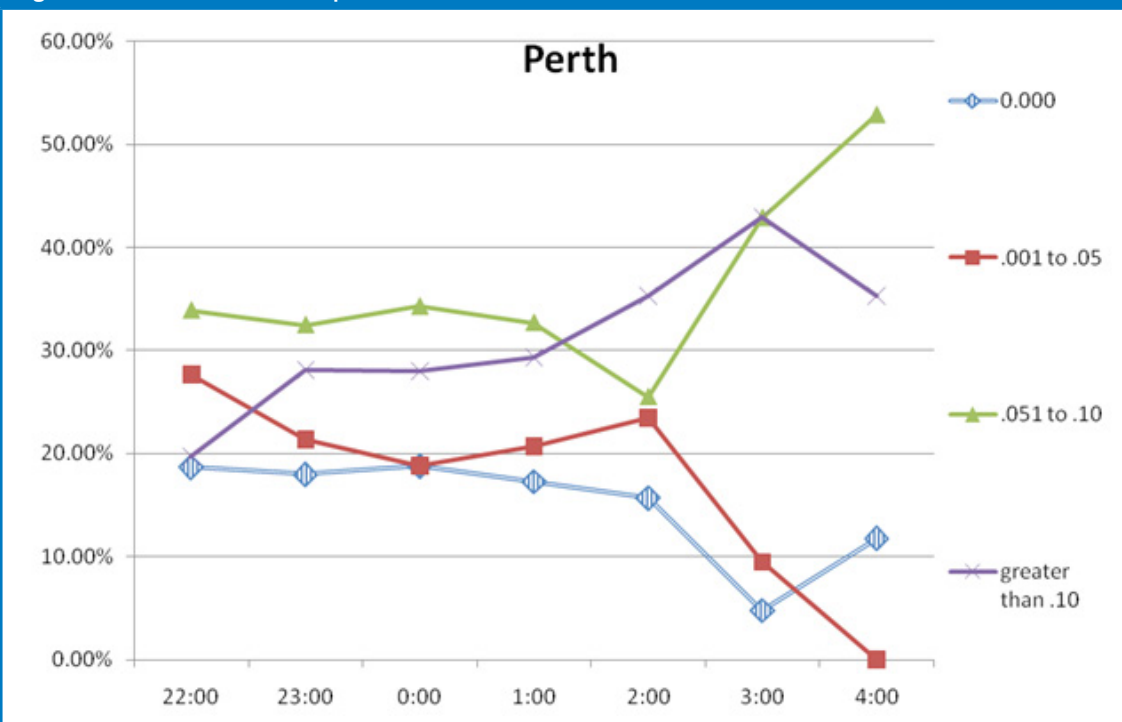
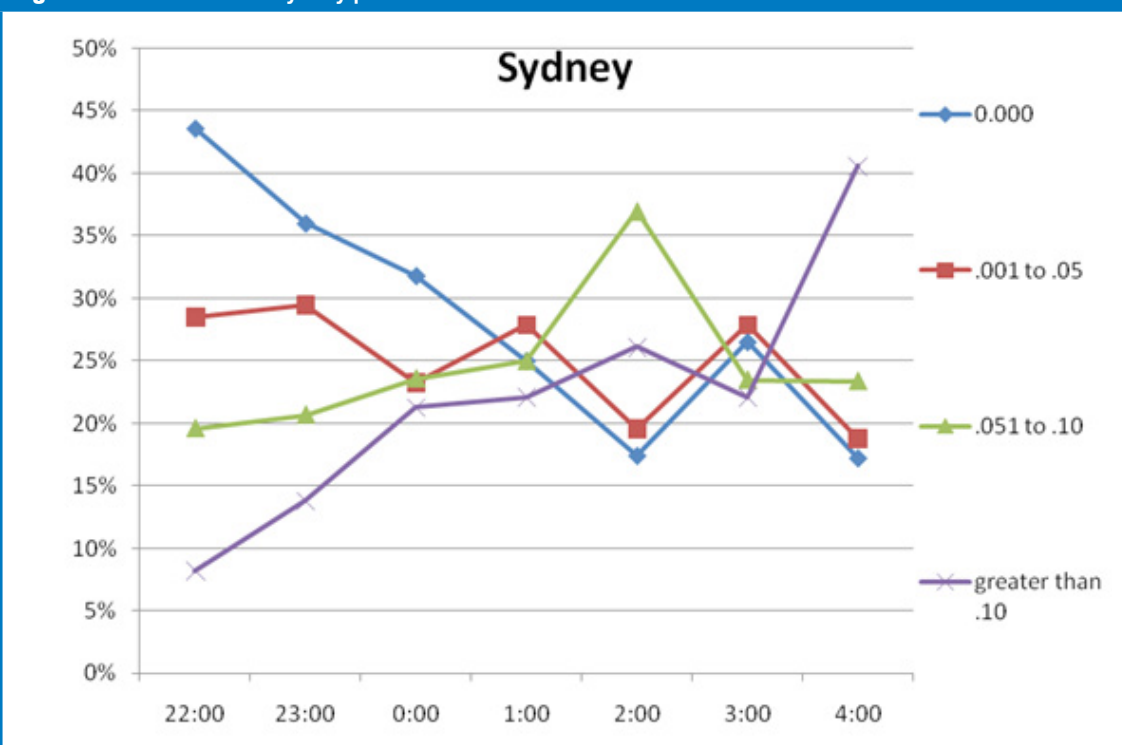
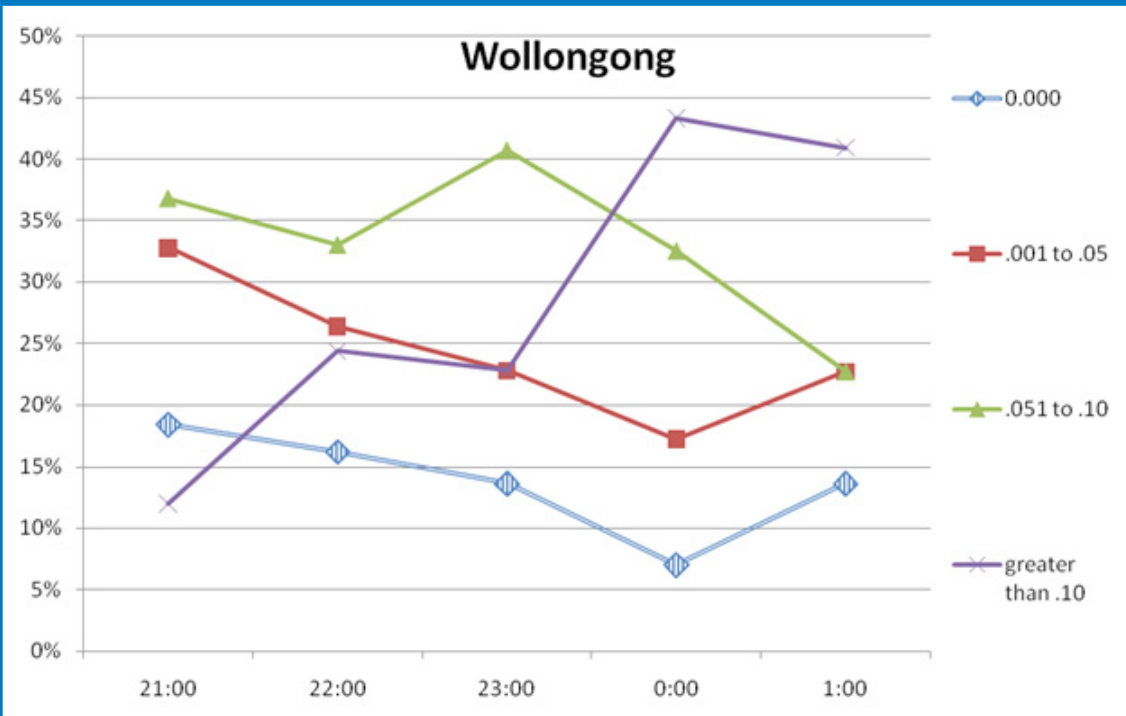
Figure 12 BAC levels for Perth per hour**Figure 13** BAC levels for Sydney per hour

Figure 14 BAC levels for Wollongong per hour

Participants undertaking the full interview (N=4,227) reported that they had been 'going for' a median of four hours when surveyed (range: 0–48 hours; Table 8). Overall, male respondents reported being out significantly longer than female respondents ($z=-5.38$, $p<0.001$) and drinking a significantly greater number of standard drinks ($z=-15.63$, $p<0.001$; Table 8). However, male and female respondents did not differ significantly in the proportions that reported consuming any alcohol prior to interview ($\chi^2=0.61$, $p=0.435$); including pre-drinking and alcohol consumption while out.

Table 7 BAC readings by self-reported level of intoxication

Self-rated level of intoxication	BAC reading Median (range)
0	0 (0–0.29)
1	0.020 (0–0.22)
2	0.032 (0–0.24)
3	0.049 (0–0.35)
4	0.064 (0–0.34)
5	0.075 (0–0.34)
6	0.087 (0–0.26)
7	0.097 (0–0.34)
8	0.101 (0–0.25)
9	0.101 (0–0.28)
10	0.097 (0–0.26)

Participants in Sydney were least likely to report consuming alcohol prior to interview ($\chi^2=99.35$, 0), and the number of standard drinks participants reported consuming ($\chi^2=64.91$, $p<0.001$) varied significantly between interview sites.

There was a positive correlation between age and the number of hours participants reported 'going for' ($r=0.13$, $p<0.001$); that is, older participants were significantly more likely to report 'going for' a greater

number of hours when interviewed. However, there were no significant differences between age groups regarding prevalence of alcohol consumption ($\chi^2=5.25$, $p=0.263$). There was also no significant correlation between age and number of standard drinks consumed ($r=0$, $p=0.868$). Nevertheless, there was a significant correlation between number of hours participants of the full interview reported 'going for' and the BAC reading ($r=0.25$, $p<0.001$).

Table 8 Current night out behaviours by sex and city/interview site

	TOTAL N=4,227 n (%)	Male N=2,443* n (%)	Female N=1,742* n (%)	Geelong	Melbourne	Perth	Sydney	Wollongong
Number of hours been 'going for', median (range)	n=4,191 4 (0–48)	n=2,417 4 (0–48)	n=1,735 4 (0–48)	n=294 3.75 (0–30)	n=1,661 4 (0–48)	n=424 3 (0–16)	n=1,063 4 (0–48)	n=715 3.5 (0–30)
Consumed alcohol tonight**	3,740 (88)	2,169 (89)	1,533 (88)	n=300 274 (91)	n=1666 1,496 (90)	n=425 387 (91)	n=1080 872 (81)	n=719 681 (95)
Number of standard drinks consumed, median (range)	7 (0.5–60)	8 (0.5–50)	6 (0.5–60)	9 (1–40)	7 (0.5–50)	6 (0.5–30)	6 (1–60)	8 (0.5–50)

*Missing gender data for 42 participants of the full interview

**Including pre-drinking and after 'going out'/attending licensed venues

Table 9 Current night out behaviours by age

	TOTAL N=4,227 n (%)	Age group*				
		18–19	20–24	25–29	30–39	40+
Number of hours been 'going for', median (range)	n=4,191 4 (0–48)	n=809 3.5 (0–20)	n=1716 4 (0–48)	n=925 4 (0–48)	n=504 4 (0–48)	n=186 5 (0.5–15)
Consumed alcohol tonight***	3,740 (88)	n=814 726 (89)	n=1724 1,536 (89)	n=932 819 (88)	n=506 464 (92)	n=186 168 (90)
Number of standard drinks consumed, median (range)	7 (0.5–60)	7 (0.5–40)	7 (0.5–50)	7 (1–50)	7 (1–50)	6 (0.5–50)

*Missing age data for 65 participants of the full interview

**Question only asked of Melbourne participants of the full interview

***Including pre-drinking and after 'going out'/attending licensed venues

Participants of the full interview who reported alcohol consumption prior to interview ($n=3,740$) described the different types of alcohol they had consumed (Table 10). Male participants were significantly more likely to report consuming full-strength beer ($\chi^2=884.67$, $p<0.001$) and dark spirits ($\chi^2=227.35$, $p<0.001$). In comparison, female respondents were significantly more likely to report having consumed wine ($\chi^2=197.90$, $p<0.001$), champagne/sparkling ($\chi^2=154.90$, $p<0.001$), cider ($\chi^2=7.40$, $p=0.007$), white spirits ($\chi^2=133.40$, $p<0.001$), 'alcopops'/'ready-to' drinks ($\chi^2=28.56$, $p<0.001$), and cocktails ($\chi^2=78.28$, $p<0.001$). Male and female participants did not differ significantly in their consumption of light beer ($\chi^2=0.658$, $p=0.417$), liqueur ($\chi^2=1.56$, $p=0.211$), and shots ($\chi^2=0.52$, $p=0.472$). There was a significant correlation between number of alcohol types consumed and BAC reading ($r=0.182$, $p<0.001$); that is, reporting consumption of a greater number of alcohol types was associated with a higher BAC reading. Participants who reported consuming any alcohol types ($n=3,719$) reported consuming a median of one type (range: 1–9).

Table 10 Types of alcohol beverages consumed prior to being surveyed, by sex

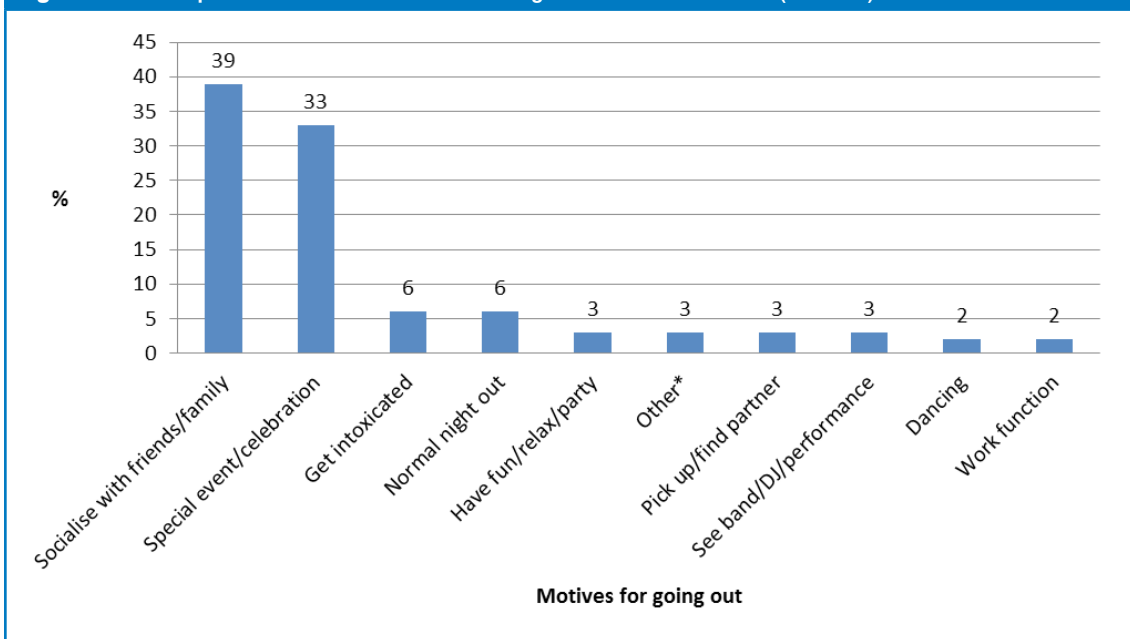
Alcohol/beverage type	TOTAL N=3,740 n (%) [*]	Male N=2,169 [†] n (%)	Female N=1,533 [†] n (%)	BAC median (range)
Full-strength beer	1,816 (49)	1,496 (69)	297 (19)	0.066 (0–0.34)
Light beer	59 (2)	37 (2)	21 (1)	0.041 (0–0.25)
Wine	716 (19)	250 (12)	460 (30)	0.064 (0–0.34)
Champagne/sparkling	245 (7)	50 (2)	193 (13)	0.065 (0–0.34)
Cider	366 (10)	189 (9)	175 (11)	0.059 (0–0.27)
White spirits	1,312 (35)	597 (28)	704 (46)	0.063 (0–0.35)
Dark spirits	803 (21)	648 (30)	142 (9)	0.065 (0–0.34)
Liqueur	143 (4)	76 (4)	66 (4)	0.047 (0–0.25)
'Alcopops'/'ready-to' drinks	212 (6)	87 (4)	125 (8)	0.059 (0–0.35)
Shots	371 (10)	208 (10)	158 (10)	0.065 (0–0.34)
Cocktails	281 (8)	93 (4)	185 (12)	0.040 (0–0.34)
Other [*]	18 (<1)	10 (<1)	8 (1)	0.083 (0.01–0.19)

[†]Missing gender data for 38 participants who reported alcohol consumption prior to interview

^{*}Percentages do not add to 100 because participants were able to nominate more than one alcohol type

^{**}Includes: punch, sangria, sake

Participants of the full interview were asked to report their main motivation for going out on the night they were surveyed (Figure 15). Of the respondents who answered this question (n=4,003), the most common reported reason for being out was to socialise with friends and/or family (39%), followed by attending a special event or celebration (eg birthday party; 33%). 'Other' (3%) main motivations included: sightseeing/being on holiday (n=16); having dinner/a meal (n=12); attending a sports event (n=8); going on a date or having a night out with a partner (n=8); and gambling (n=4).

Figure 15 Self-reported main motivations for being out when interviewed (N=4003)

Interviewer-recorded signs of intoxication (ANY)

Interviewers recorded visible signs of intoxication for all participants based on both a standard checklist of intoxication signs and a list of signs which they were able to add to, and just under half of all participants showed some sign of being intoxicated ($n=3,363$, 49%; Table 11). The city/interview location with the highest proportion of participants with any interviewer-recorded signs of intoxication was Geelong ($\chi^2=203.21$, $p<0.001$). Participants with at least one interviewer-recorded sign of intoxication were more likely to: be male ($\chi^2=41.99$, $p<0.001$), record a higher BAC reading ($z=-30.98$, $p<0.001$), report 'going for' more hours ($z=-12.23$, $p<0.001$), report consuming more standard drinks prior to interview ($z=-20.46$, $p<0.001$), report consuming energy drinks ($\chi^2=47.57$, $p<0.001$), report mixing energy drinks with alcohol ($\chi^2=38.79$, $p<0.001$), and report consuming drugs pre-interview ($\chi^2=170.83$, $p<0.001$; Table 12).

Table 11 Interviewer-recorded signs of intoxication, by city/interview location

Drug	TOTAL N=6,804 n (%)	Geelong* N=1,262 n (%)	Melbourne* N=1,927 n (%)	Perth* N=1,244 n (%)	Sydney* N=1,560 n (%)	Wollongong* N=730 n (%)
Loss of coordination	716 (11)	223 (18)	195 (10)	92 (7)	158 (10)	44 (6)
Slurred speech	1,585 (23)	423 (34)	419 (22)	233 (19)	324 (21)	183 (25)
Spilling drinks	51 (1)	7 (1)	5 (<1)	20 (2)	4 (<1)	15 (2)
Staggering/falling over	486 (7)	152 (12)	140 (7)	57 (5)	88 (6)	48 (7)
Glassy/red eyes	2,067 (30)	492 (39)	686 (36)	179 (14)	506 (32)	202 (28)
Indicated illicit drug use	378 (6)	81 (6)	101 (5)	36 (3)	131 (8)	28 (4)
Very slow/dopey responses	208 (3)	65 (5)	51 (3)	52 (4)	14 (1)	26 (4)
Talking very quickly/ talkative	357 (5)	134 (11)	75 (4)	76 (6)	33 (2)	39 (5)
Boisterous/loud	306 (5)	114 (9)	51 (3)	82 (7)	29 (2)	30 (4)
Giggly	170 (3)	86 (7)	35 (2)	21 (2)	16 (1)	12 (2)
Disjointed responses	165 (2)	67 (5)	26 (1)	33 (3)	11 (1)	28 (4)
Confused	107 (2)	49 (4)	22 (1)	21 (2)	7 (<1)	8 (1)
Hyperactive	149 (2)	56 (4)	26 (1)	34 (3)	24 (2)	9 (1)
Other**	85 (1)	35 (3)	22 (1)	16 (1)	6 (<1)	6 (1)
ANY	3,363 (49)	833 (66)	971 (50)	488 (39)	701 (45)	362 (50)

*Missing location data for 81 participants

**Includes: 'messy makeup', 'sleazy', 'red face', 'hiccupping', etc.

Table 12 BAC reading and self-reported indicators of intoxication, by any interviewer-recorded signs of intoxication (yes/no)

Variable	TOTAL N=6,804	Any interviewer-recorded signs of intoxication?	
		Yes n=3,363	No n=3,441
Male	4,156 (61)	2,188 (65)	1,968 (58)
BAC reading, median (range)	0.054 (0–0.35)	0.077 (0–0.34)	0.029 (0–0.35)
No. of hours ‘going for’, median (range)*	4 (0–48)	4.5 (0–48)	3.5 (0–48)
No. drinks consumed, median (range)*	7 (0.5–60)	8 (0.5–60)	5 (0.5–40)
Consumed energy drinks	1,536 (23)	878 (26)	658 (19)
Mix energy drinks with alcohol**	996 (65)	627 (71)	369 (56)
Consumed any drugs pre-interview	1,072 (16)	724 (22)	348 (10)

*Among participants only participating in the full interview

**Among those who reported energy drink consumption

Number of Interviewer-recorded signs of intoxication

Forty-one percent of participants (n=2,182) were reported to have had slurred speech, be spilling drinks, staggering/falling over, and/or have had glassy/red eyes. Of these participants, the median number of interviewer-recorded signs of intoxication was one (range: 1 to 4 signs). Male participants were significantly more likely than female participants to present with any of these indicators of intoxication (45% vs. 36%; $\chi^2=50.50$, $p<0.001$); however, of the participants who presented with any of these signs of intoxication, there was no significant difference between males and females relating to how many signs participants presented with ($z=-7.29$, $p=0.088$). Overall, there was a significant positive correlation between BAC reading and number of signs of a participant’s intoxication ($r=0.39$, $p<0.001$; Table 13). Further, among participants of the full interview there were significant correlations between number of intoxication signs and the number of hours participants reported ‘going for’ ($r=0.20$, $p<0.001$) and self-reported number of standard drinks consumed prior to interview ($r=0.33$, $p<0.001$).

Table 13 BAC reading, by number of interviewer-recorded signs of intoxication (only: slurred speech, spilling drinks, staggering/falling over and glassy/red eyes)

Number of interviewer-recorded signs of intoxication	BAC reading Median (range)
0	0.035 (0–0.35)
1	0.067 (0–0.34)
2	0.092 (0–0.28)
3	0.122 (0–0.34)
4	0.155 (0.08–0.22)

Pre-drinking behaviours

Almost two-thirds of the overall sample (65%) reported pre-drinking during their current night out (ie consuming alcohol before attending licensed venues/‘going out’) see Table 14. Male participants were significantly more likely to report pre-drinking than female participants ($\chi^2=13.99$, $p<0.001$) and to have consumed more alcohol when doing so ($z=-11.69$, $p<0.001$). Younger participants were significantly more likely to report pre-drinking ($\chi^2=17.88$, $p=0.001$), as were participants in Geelong and Perth ($\chi^2=452.01$, $p<0.001$). However, there was no significant correlation between number of pre-drinks consumed and age ($r=-0.03$, $p=0.160$).

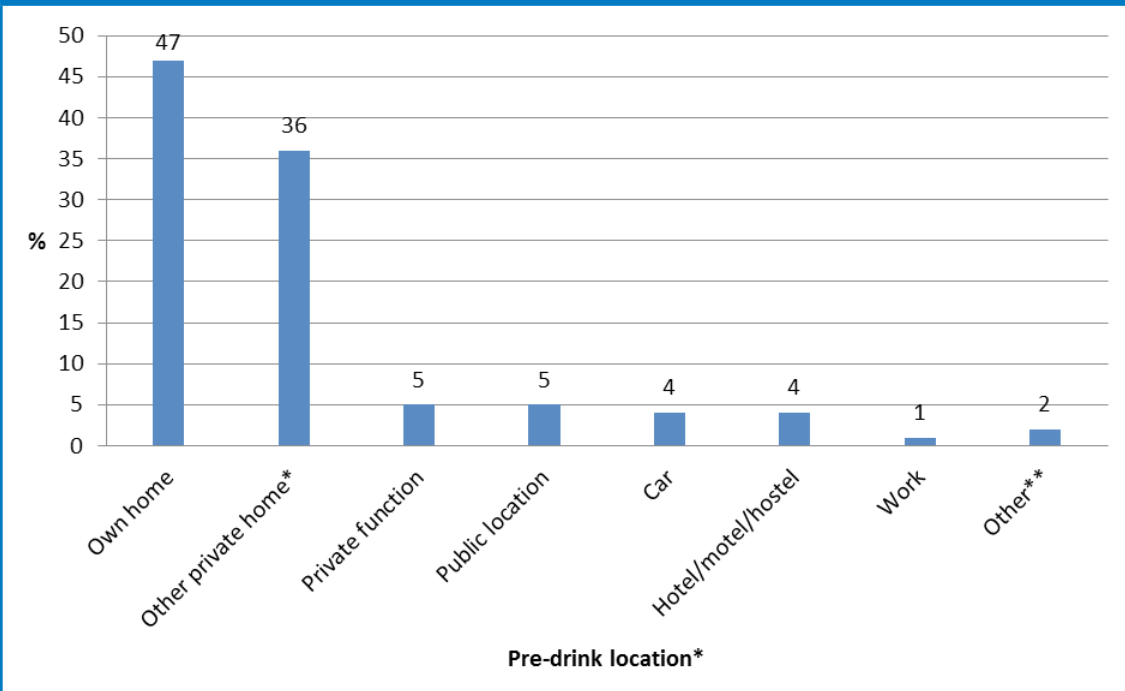
Table 14 Pre-drinking behaviours by sex, age and city/interview location (entire sample)

Variable	Pre-drink (%)	Median no. drinks (range)*
Sex [†]		
Male (n=4,151)	2,762 (67)	6 (0.5–100)
Female (n=2,605)	1,617 (62)	4 (1–50)
Age [†]		
18–19 (n=1,606)	1,241 (77)	6 (0.5–100)
20–24 (n=2,833)	1,906 (67)	6 (0.5–50)
25–29 (n=1,503)	770 (57)	5 (0.5–60)
30–39 (n=548)	363 (52)	5 (1–37)
40+ (n=230)	101 (44)	3 (1–20)
City/interview location [†]		
Geelong (n=1,260)	1,019 (81)	6 (1–100)
Melbourne (n=1,927)	1,085 (56)	4 (0.5–25)
Perth (n=1,242)	993 (80)	6 (0.5–40)
Sydney (n=1,558)	805 (52)	5 (1–32)
Wollongong (n=730)	440 (60)	4 (0.5–24)
TOTAL (N=6,798)	4,396 (65)	5 (0.5–100)

*Among participants who reported pre-drinking

[†]Missing gender data for 42 participants; missing age data for 78 participants; missing location data for 81 participants; missing pre-drinking data for six participants

Participants of the full interview who reported consuming alcohol before attending licensed venues or ‘going out’ were asked to nominate locations where they had done so (Figure 16). Those who answered this question (N=2,297) reported most commonly pre-drinking in private homes (82%). Smaller proportions reported pre-drinking at private functions (5%), in cars (4%) and at work (1%). ‘Other’ locations (2%) included: university (n=9), on a train (n=8), and at a sports club/event (n=5).

Figure 16 Locations where participants (N=2,297) reported pre-drinking*

*Percentages do not add to 100 because participants were able to nominate more than one location

Overall, participants who reported pre-drinking before attending licensed venues/‘going out’ were more likely to engage in heavier alcohol consumption patterns and risk behaviours (Table 15).

They were significantly more likely to record a higher BAC reading ($z=-26.49$, $p<0.001$) and to report:

- consuming more standard drinks pre-interview (‘full interview’ participants only; $z=-14.71$, $p<0.001$);
- consuming energy drinks ($\chi^2=81.91$, $p<0.001$) and mixing energy drinks with alcohol ($\chi^2=149.84$, $p<0.001$);
- consuming illicit drugs pre-interview ($\chi^2=77.40$, $p<0.001$);
- being involved in any aggressive behaviours in the last three months ($\chi^2=20.98$, $p<0.001$);
- incurring alcohol-related injuries/accidents in the last three months ($\chi^2=31.76$, $p<0.001$);
- engaging in property crime in the last three months while alcohol-intoxicated ($\chi^2=16.34$, $p<0.001$); and
- driving under the influence of alcohol during that time ($\chi^2=13.12$, $p<0.001$).

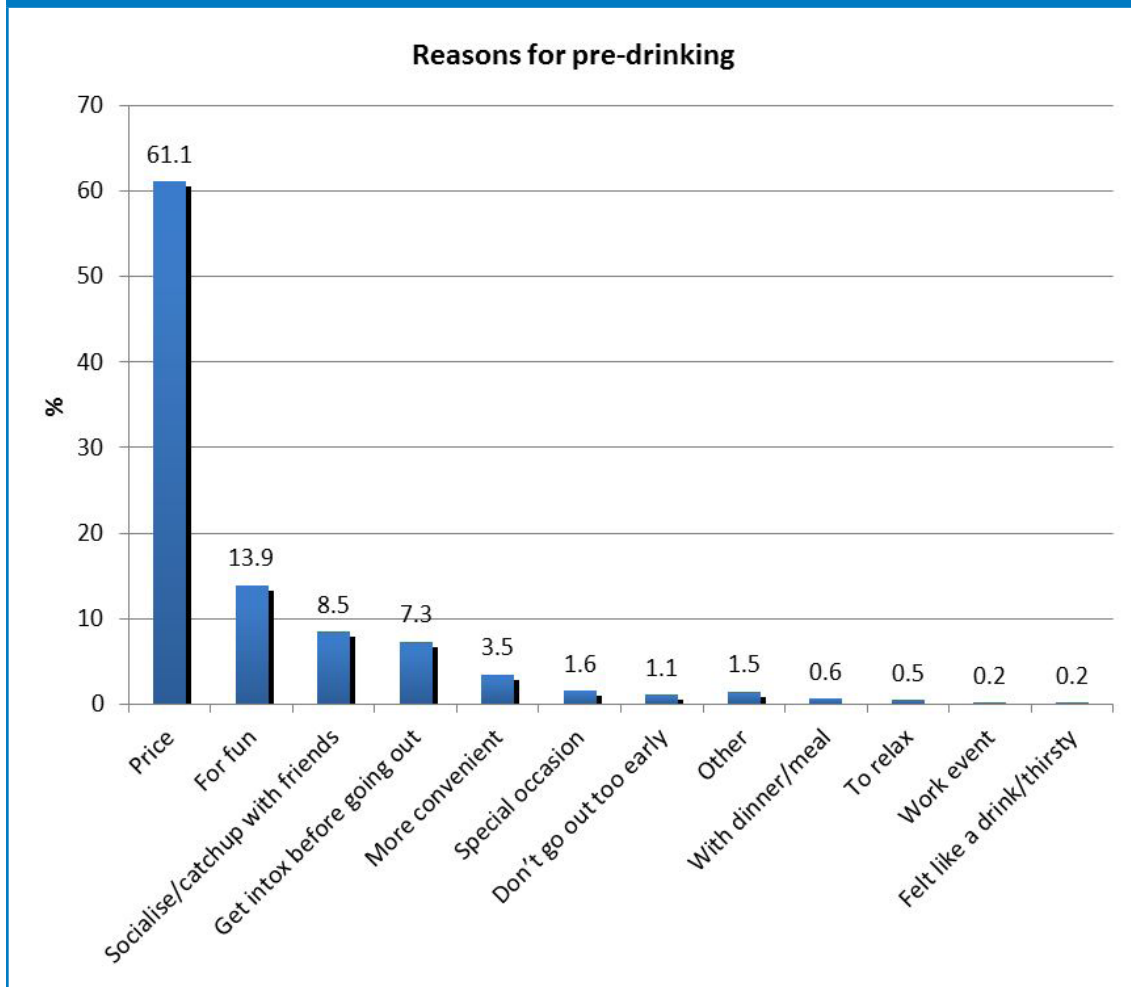
Table 15 Pre-drinking behaviours by current night and risk behaviours/consumption patterns

Variable	Pre-drank?	
	Yes (n=4,396) n (%)	No (n=2,402) n (%)
BAC reading, median (range)	0.068 (0–0.35)	0.021 (0–0.34)
Number standard drinks consumed*	n=2,260 8 (1–60)	n=1,365 5 (0.5–35)
Consumed energy drinks	n=4,395	
No. energy drinks consumed**	1,141 (26)	393 (16)
Mix energy drinks with alcohol**	2 (0.25–20) 840 (73)	1 (0.5–15) 155 (39)
Consumed illicit drugs	n=4,362 818 (19)	n=2,392 253 (11)
Involved any aggression last three months	810 (18)	338 (14)
Incurred any alcohol-related accidents/injuries last three months	n=4,247 672 (16)	n=2,201 235 (11)
Committed property crime last three months*	n=2,154 114 (5)	n=1,684 45 (3)
Driven under influence last three months*	n=2,179 345 (16)	n=1,716 202 (12)

*Only participants of the full interview

**Of those who reported energy drink consumption

Overall, price was the most commonly reported motivation for pre-drinking. Almost two thirds (61%) of self-reported pre-drinkers reported price as the most important motivator (Figure 17). Social motivators, such as ‘for fun’ and ‘chance to catch up with friends’ accounted for another 22.4 percent of stated reasons for pre-drinking. Of the participants, 7.3 percent nominated the desire to become intoxicated before entering licensed venues, while 3.5 percent stated that they were motivated by convenience, such as not having to wait in line to get served.

Figure 17 Self-reported main motivation for pre-drinking (n=3,534)

Energy drink consumption

Nearly a quarter of participants said they consumed energy drinks that night with 14.6 percent reporting that they combined energy drinks with alcohol. Male and female participants were similar in their consumption of energy drinks ($\chi^2=2.60$, $p=0.107$) or of alcohol and energy drinks ($\chi^2=0.15$, $p=0.699$). However, males were significantly more likely to report consuming a greater number of energy drinks ($z=-2.10$, $p=0.036$; see Table 16). There was a negative correlation between age and number of energy drinks consumed ($r=-0.08$, $p=0.002$); that is, younger participants generally consumed more energy drinks. Younger participants were also significantly more likely to report mixing energy drinks with alcohol ($\chi^2=11.82$, $p=0.019$). Energy drink consumption was more prevalent in Geelong, Perth and Sydney ($\chi^2=63.11$, $p<0.001$), and participants in Wollongong were more likely to report mixing energy drinks with alcohol ($\chi^2=25.66$, $p<0.001$).

Table 16 Energy drink consumption by sex, age and city/interview location (entire sample)

Variable	Consumed energy drinks tonight (%)	Median no. drinks (range)*	Mixed with alcohol (%)*
Sex [†]			
Male (n=4,156)	965 (23)	1.5 (0.25–17)	603 (62)
Female (n=2,605)	561 (22)	1 (0.5–20)	387 (69)
Age [†]			
18-19 (n=1,607)	442 (28)	1 (0.5–17)	305 (69)
20-24 (n=2,833)	703 (25)	2 (0.5–20)	461 (66)
25-29 (n=1,351)	248 (18)	1 (0.25–10)	148 (60)
30-39 (n=703)	115 (16)	1 (0.5–15)	65 (57)
40+ (n=231)	20 (9)	1 (0.5–2)	10 (50)
City/interview location [†]			
Geelong (n=1,262)	359 (28)	2 (0.5–15)	245 (68)
Melbourne (n=1,926)	349 (18)	1 (0.5–17)	201 (58)
Perth (n=1,244)	305 (25)	1 (0.25–10)	201 (66)
Sydney (n=1,560)	374 (24)	1.5 (0.5–20)	232 (62)
Wollongong (n=730)	126 (17)	1 (0.5–9)	102 (81)
TOTAL (N=6,803)	1,536 (23)	1 (0.25–20)	996 (65)

*Of those who reported consuming energy drinks

[†]Missing gender data for 42 participants; missing age data for 78 participants; missing location data for 81 participants; missing energy drink data for one participant

Participants who consumed energy drinks with alcohol self-reported consuming significantly more energy drinks than those who had consumed only those drinks ($z=8.3938$, $p<0.001$). In addition, participants who consumed alcohol with energy drinks self-reported consuming significantly more alcohol than those who consumed only alcohol ($z=9.2897$, $p<0.001$). Finally, those who consumed energy drinks were significantly more likely to report pre-drinking ($\chi^2=81.908$, $p<0.001$) and significantly more likely to report illicit drug use ($\chi^2=41.528$, $p<0.001$) compared with those who had not consumed energy drinks.

Table 17 presents BAC readings according to energy drink consumption behaviours. Consistent with self-reported drinks, participants who reported consuming energy drinks prior to interview were significantly more likely to record a higher BAC reading than respondents who had not consumed energy drinks ($z=-6.23$, $p<0.001$). Of the participants with BAC data who reported consuming energy drinks ($n=1,483$), those who reported mixing energy drinks with alcohol generally recorded a higher BAC reading ($z=-9.79$, $p<0.001$). Further, there was a positive correlation between number of energy drinks consumed and BAC reading ($r=0.08$, $p=0.001$); that is, participants who reported consuming more energy drinks generally recorded higher BAC readings. People who had consumed energy drinks also self-reported higher mean levels of intoxication (4.56 versus 3.95 for people who had not consumed energy drinks; $t=7.901$, $p<0.005$).

Table 17 BAC readings by energy drink consumption behaviours

Variable	BAC Median (range)
Consumed energy drinks	
Yes (n=1,483)	0.063 (0–0.35)
No (n=5,073)	0.051 (0–0.34)
Mix energy drinks with alcohol	
Yes (n=971)	0.072 (0–0.35)
No (n=512)	0.040 (0–0.29)
Number energy drinks consumed	
≤1 (n=720)	0.057 (0–0.25)
1.5–2 (n=328)	0.063 (0–0.29)
2.5–3 (n=150)	0.077 (0–0.29)
3.5–4 (n=97)	0.063 (0–0.34)
5+ (n=130)	0.074 (0–0.23)
TOTAL (N=6,557)*	0.054 (0–0.35)

*No BAC data for 247 participants

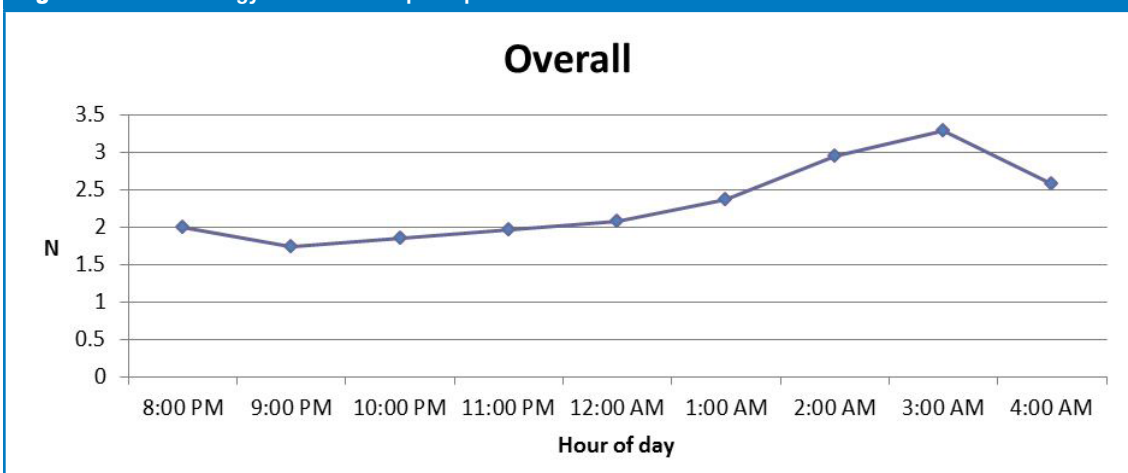
Figure 18 Mean energy drink consumption per hour across all sites

Figure 18 and Figure 19 report the mean number of energy drinks consumed by interviewees overall and across all sites respectively. The sites show a remarkable consistency with a peak in consumption at 2–3 am of around three standard energy drinks, one above the recommended daily intake. Figure 18 Mean energy drink consumption per hour across all sites shows that mean consumption increases to more than two drinks between 11 pm and midnight.

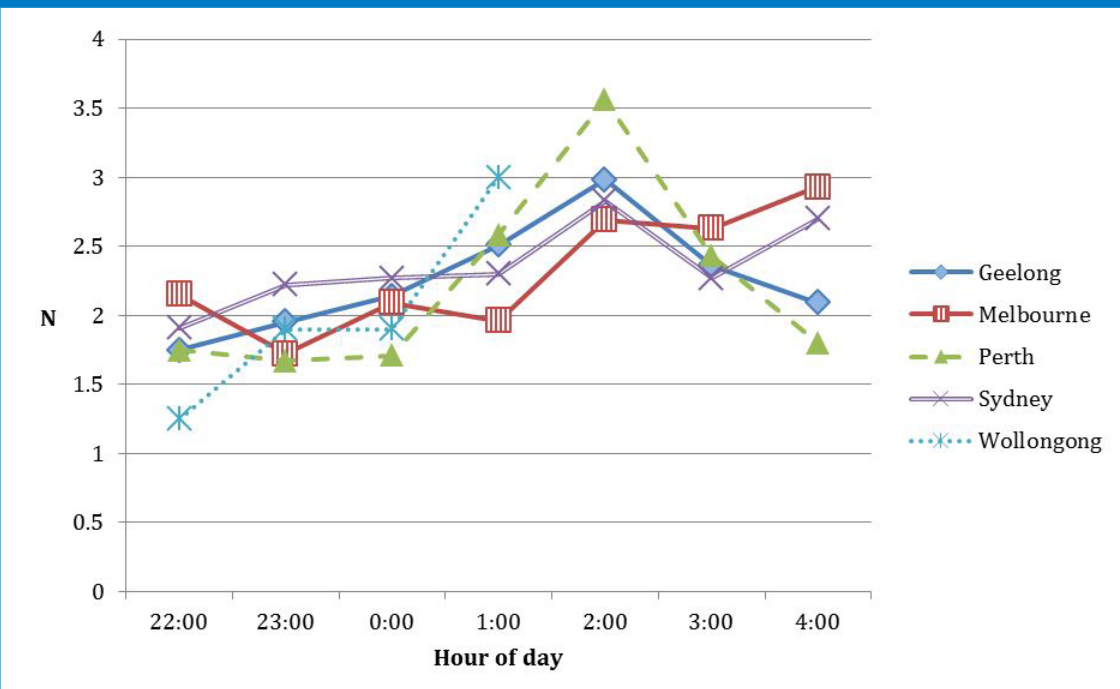
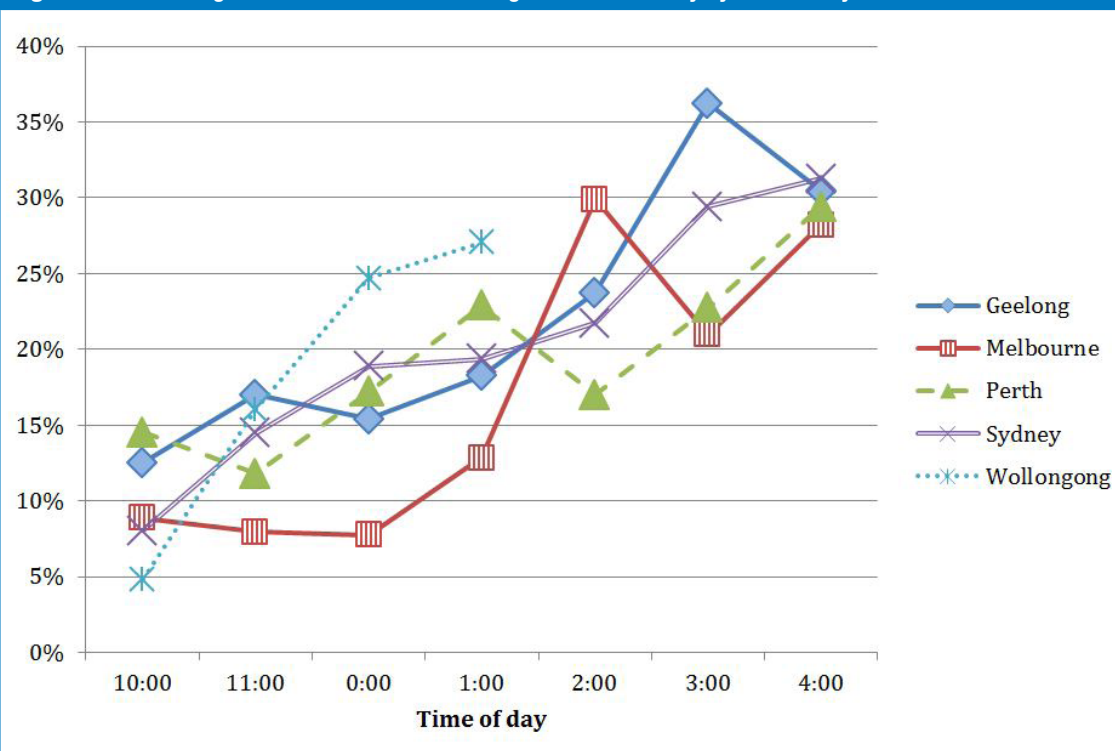
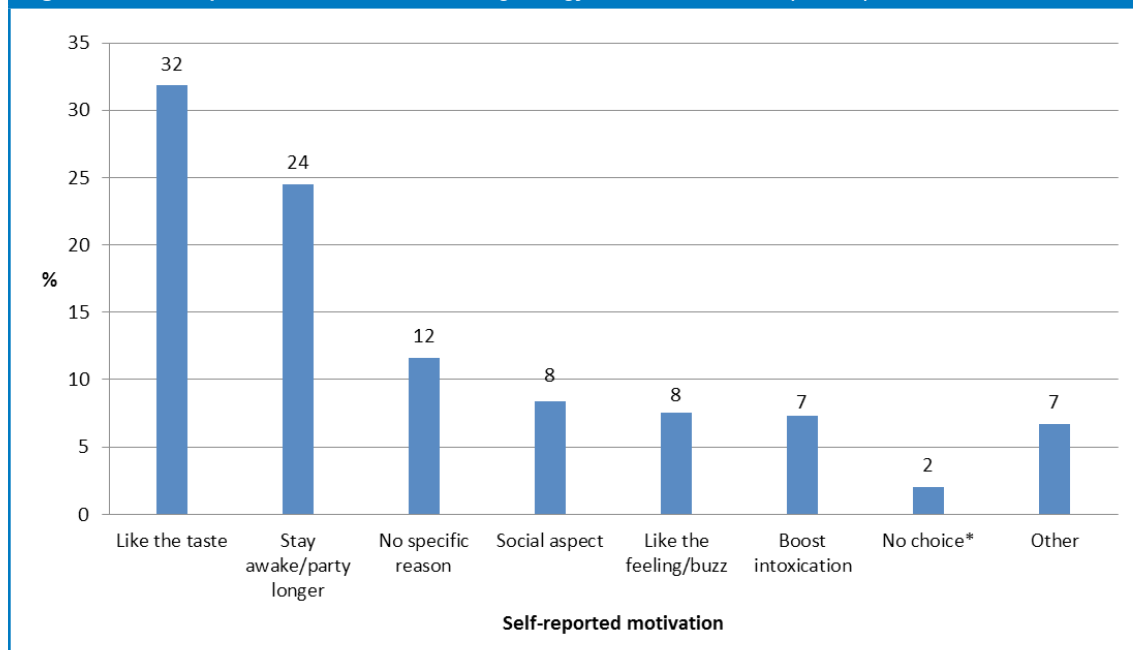
Figure 19 Mean energy drinks consumed for each city by hour of day**Figure 20** Percentage of interviewees consuming AED for each city by hour of day

Figure 20 shows the percentage of interviewees who reported consuming alcohol mixed with energy drinks for each city throughout the night. As with energy drink consumption alone, the trends are remarkably similar for all of the cities. Almost all have around 30 percent of people interviewed at the end of the night reporting having consumed AED. Surprisingly, despite a ban on serving energy drinks with alcohol after midnight in Perth, consumption patterns were similar to other cities.

Participants of the full interview were asked to report their main motivation for combining energy drinks and alcohol (Figure 21). Those who answered this question (N=490) most commonly reported liking the taste of the combined drinks (32%), and that combining these drinks provided them with energy to stay awake/party longer (24%). Smaller proportions reported that they enjoyed the feeling/buzz (8%), or that the combination increased/boosted alcohol intoxication (7%). 'Other' (7%) motivations for mixing alcohol and energy drinks included: peer pressure (n=3), to feel less drunk (n=3), the cheap price (n=2), and boredom (n=1). Reasons for combining energy drinks and alcohol did not vary significantly between sites.

Figure 21 Main reported motivations for mixing energy drinks and alcohol (N=490)



Energy drink use and experience of aggression/harm

People who reported consuming energy drinks were also more likely to experience any form of aggression in the past three months than those who had not ($\chi^2=41.10$, $p=0.000$). Table 18 reports the number of people who experienced different types of aggression, and their energy drink use. As shown in the table, people who reported energy drink use on the night of interview were significantly more likely to report experiencing verbal or physical aggression over the past three months. The difference was not significant for sexual aggression, potentially because of the small numbers involved.

Table 18 Energy drink use and experience of harm in past three months

TOTAL (N=6,803)	Consumed energy drinks tonight (%)		Chi-square	p
	Yes n=1,536	No n=5,267		
Any aggression around licensed venues last three months?	342	806	41.01	0.000
—physical aggression	226	502	33.42	0.000
—verbal aggression	189	436	23.11	0.000
—sexual aggression	36	87	3.21	0.073
Any accident/injury past three months	281	626	39.498	0.000

Table 18 also shows that people who reported consuming energy drinks on the night of interview were more likely to report having experienced an alcohol-related accident in the previous three months.

Energy drink use and offending behaviour

People who had consumed energy drinks on the night of interview were also more likely to report having been refused entry to a venue in the past three months than those who had not ($\chi^2=41.10$, $p=0.000$). Of those who had had been refused entry in the three months prior to interview, 23.8 percent had consumed energy drinks, compared with 18.4 percent of those who had not.

Finally, people who had consumed energy drinks on the night of interview were also more likely to report having driven while drunk ($\chi^2=5.51$, $p=0.019$) or having committed property crime ($\chi^2=5.51$, $p=0.019$) while intoxicated in the past three months, than those who had not consumed energy drinks. Overall, 23 percent of those who had consumed energy drinks reported drink-driving compared with 18.6 percent of those who had not.

Other Substance Use

Around one in six ($n=1,072$, 16%) of the overall sample reported using substances other than alcohol during their current night out (prior to interview).

Table 19 lists by city, the proportions of participants who reported using different drug types. A small number of participants ($n=44$, <1%) refused to answer interview questions about other substance use.

Table 19 Self-reported use of substances other than alcohol during current night out (prior to interview) among entire sample, by city/interview location

Drug	TOTAL N=6,804 n (%)	Geelong N=1,262 n (%)	Melbourne N=1,927 n (%)	Perth N=1,244 n (%)	Sydney N=1,560 n (%)	Wollongong N=730 n (%)
Ecstasy	231 (3)	58 (5)	36 (2)	13 (1)	101 (6)	18 (2)
Cocaine	97 (1)	13 (1)	33 (2)	15 (1)	24 (2)	10 (1)
Methamphetamine*	179 (3)	52 (4)	64 (3)	16 (1)	39 (3)	7 (1)
Pharmaceutical stimulants**	30 (<1)	7 (1)	3 (<1)	12 (1)	6 (<1)	2 (<1)
Ketamine	5 (<1)	3 (<1)	0 (0)	0 (0)	2 (<1)	0 (0)
Benzodiazepines	8 (<1)	3 (<1)	4 (<1)	0 (0)	1 (<1)	0 (0)
GHB	8 (<1)	2 (<1)	1 (<1)	1 (<1)	3 (<1)	1 (<1)
LSD	15 (<1)	1 (<1)	6 (<1)	3 (<1)	5 (<1)	0 (0)
Cannabis	196 (3)	37 (3)	68 (4)	29 (3)	48 (3)	14 (2)
Opiates***	10 (<1)	5 (<1)	3 (<1)	1 (<1)	1 (<1)	0 (0)
Mephedrone	6 (<1)	3 (<1)	0 (0)	3 (<1)	0 (0)	0 (0)
Other****	32 (1)	5 (<1)	10 (1)	4 (<1)	0 (0)	4 (1)
ANY	1,072 (16)	318 (25)	272 (14)	166 (13)	214 (14)	89 (12)

*Refers primarily to speed powder, crystal methamphetamine/'ice', amphetamine liquid, and methamphetamine base

**Include: dexamphetamine and ritalin

***Include: heroin, morphine, endone, codeine

****Includes: nitrous oxide ('gas'), 'magic mushrooms' and other pharmaceuticals (eg, over-the-counter painkillers)

Table 20 lists the proportions of participants who reported using different drug types among those who reported consuming drugs pre-interview, according to sex and city/interview location. Male participants were significantly more likely to report consuming cocaine ($\chi^2=7.17$, $p=0.007$), methamphetamine ($\chi^2=4.08$, $p=0.043$) and cannabis ($\chi^2=14.57$, $p<0.001$) than female participants. Self-reported prevalence of ecstasy use was highest in Sydney ($\chi^2=115.81$, $p<0.001$), while participants in Geelong who reported pre-interview drug consumption reported the lowest proportion of cocaine use ($\chi^2=14.49$, $p=0.006$). Use of methamphetamine varied significantly between sites, with Melbourne participants reporting the highest

prevalence of methamphetamine use ($\chi^2=20.33$, $p<0.001$). Cannabis use also varied between cities; again, Melbourne participants reported the highest prevalence of cannabis consumption ($\chi^2=20.32$, $p<0.001$). Very few participants reported using pharmaceutical stimulants, ketamine, benzodiazepines, GHB, LSD and mephedrone.

Table 20 Prevalence of self-reported use of substances other than alcohol during current night out (prior to interview) among participants who reported drug consumption, by sex

Drug	TOTAL N=1,072 n (%)	Participant sex		City/interview location				
		Male N=752 [†] n (%)	Female N=312 [†] n (%)	Geelong N=318 [‡] n (%)	Melbourne N=272 [‡] n (%)	Perth N=166 [‡] n (%)	Sydney N=214 [‡] n (%)	Wollongong N=89 [‡] n (%)
Ecstasy	231 (22)	172 (23)	57 (18)	58 (18)	36 (13)	13 (8)	101 (47)	18 (20)
Cocaine	97 (9)	80 (11)	17 (5)	13 (4)	33 (12)	15 (9)	24 (11)	10 (11)
Methamphetamine*	179 (17)	137 (18)	41 (13)	52 (16)	64 (24)	16 (10)	39 (18)	7 (8)
Pharmaceutical stimulants**	30 (3)	27 (3)	9 (3)	7 (2)	3 (1)	12 (7)	6 (3)	2 (2)
Ketamine	5 (<1)	5 (1)	0 (0)	3 (1)	0 (0)	0 (0)	2 (1)	0 (0)
Benzodiazepines	8 (1)	5 (1)	3 (1)	3 (1)	4 (1)	0 (0)	1 (<1)	0 (0)
GHB	8 (1)	5 (1)	3 (1)	2 (1)	1 (<1)	1 (1)	3 (1)	1 (1)
LSD	15 (1)	14 (2)	1 (<1)	1 (<1)	6 (2)	3 (2)	5 (2)	0 (0)
Cannabis	196 (18)	159 (21)	35 (11)	37 (12)	68 (25)	29 (17)	48 (22)	14 (16)
Opiates***	10 (1)	6 (1)	4 (1)	5 (2)	3 (1)	1 (1)	1 (<1)	0 (0)
Mephedrone	6 (1)	4 (1)	2 (1)	3 (1)	0 (0)	3 (2)	0 (0)	0 (0)
Other****	32 (3)	21 (3)	11 (4)	5 (2)	10 (4)	4 (2)	9 (4)	4 (4)

*Refers primarily to speed powder, crystal methamphetamine/‘ice’, amphetamine liquid, and methamphetamine base

**Includes: dexamphetamine and ritalin

***Includes: heroin, morphine, endone, codeine

****Includes: nitrous oxide (‘gas’), ‘magic mushrooms’ and other pharmaceuticals (eg over-the-counter painkillers)

[†]Missing gender data for six participants who reported any drug use prior to interview

[‡]Missing location data for 13 participants who reported any drug use prior to interview

Drug tests results

Five hundred and three participants in Melbourne and Geelong were invited to be tested for the use of methamphetamine, cocaine, opiates, cannabis and benzodiazepines, via drug swab. Most respondents (n=401, 80%) agreed to the test. Table 21 lists the prevalence of positive drug test findings for these respondents according to sex and city/interview location. No significant differences emerged between males and females or interview sites relating to the prevalence of positive test results for any drug type.

Table 21 Positive drug swab test results by sex and city/interview location

Drug	TOTAL N=401 n (%)	Participant sex		City/interview site	
		M N=285* n (%)	F N=116* n (%)	Geelong N=170* n (%)	Melbourne N=229* n (%)
Methamphetamine**	61 (15)	44 (16)	16 (14)	29 (17)	32 (14)
Cocaine	14 (3)	10 (4)	3 (3)	4 (2)	10 (4)
Opiates	0 (0)	–	–	–	–
Cannabis	21 (5)	14 (5)	7 (6)	7 (4)	14 (6)
Benzodiazepines	3 (1)	2 (1)	1 (1)	0 (0)	3 (1)
ANY	80 (20)	55 (19)	23 (20)	36 (21)	44 (19)

*Missing gender data for three participants and missing location data for two participants who completed a drug test

** It should be noted that mouth swabs do not identify MDMA as being distinct from other amphetamine-type substances without further testing

Table 22 presents the self-report responses of participants regarding use of illicit drugs prior to interview according to positive drug swab results. Overall, 50 percent (n=44) of participants, who reported prior consumption of methamphetamine, cocaine, opiates, cannabis and benzodiazepines and who were drug swabbed, did not return a positive drug swab result. For example, of the participants who reported using cannabis (n=57), only 16 percent (n=9) returned a positive drug swab result for that drug. Only half (n=44, 50%) of those participants who reported consuming methamphetamine, cocaine, opiates, cannabis and/or benzodiazepines earlier in the night returned a positive drug swab result for any of these substances.

In comparison to national self-report surveys (Australian Institute of Health and Welfare, 2011a), there was an under-representation of cannabis use; 10.3 percent of the population report cannabis use in the NDSHS compared to this study, in which only 5 percent of people tested positive. Given that 18 percent interviewees self-reported cannabis use, and people who attend NEDs generally report higher levels of risky behaviour, it is reasonable to assume that the drug wipes failed to identify a substantial amount of cannabis use. It should be acknowledged that mouth swabs may be ineffective in detecting cannabis use due to the fast acting nature of the drug and because eating and drinking may wash the mouth free of cannabis resin. Other factors which might affect test reliability are: patron intoxication influencing reliability of results; the purity of drugs; and peer group /social influence effects on inaccurate (e.g. exaggerated) self-reported drug use.

Of the people who were offered drug swabs that had reported no substance use, 54 (20%) declined to be tested and 216 (80%) agreed. Of the people tested who did agree, a further 16 (5.9%) were detected using drugs. Assuming that those who refused to be tested had, in fact used drugs, around a quarter of the people who had denied drug use might have used drugs (25.9%; 20% who declined to be tested and 5.9% of those who denied use and were subsequently found to have used). At the outer extreme, if we were to rely exclusively on the test data, it was found that 20% of people tested were positive and 20% refused a test. If we made the assumption that all who refused had taken drugs then we end up with a maximum of 40 percent of the sample tested taking drugs. However, reports from interviewers were that some people refused simply because their friends were waiting and that others clearly felt it to be an intrusion on their privacy. On the other hand, there were a high proportion of false negatives, where people reported taking drugs, but the tests failed to detect any use.

When trying to summarise these figures, we have a minimum figure of 16 percent self reporting drug use. In addition, 5.9 percent of interviewees who reported no drug use, but agreed to be tested, we found to have used drugs. This would give use a low figure of 21.9 percent of people using drugs, similar to the 20% of people overall who were identified as having used drugs via the testing, although we know there is a likely under-detection of cannabis in particular. At the other end of the spectrum, if we assume all people who refused tests are using drugs, an upper figure of 40 percent of patrons could be reached. On the balance of these data sources and different measures, it is likely that slightly more than 20 percent of the people attending NEDs in Australia had used some form of illicit drug, with an extreme figure of 40 percent.

Table 22 Self-report versus drug swab results of pre-interview drug use

Pre-interview drug use	Self report Yes/No	Drug swab: Positive test result n (%)
Meth/amphetamine	Y (n=67) N (n=332)	35 (52) 26 (8)
Cocaine	Y (n=23) N (n=376)	6 (26) 8 (2)
Opiates	Y (n=3) N (n=396)	0 (0) 396 (100)
Cannabis	Y (n=57) N (n=342)	9 (16) 12 (4)
Benzodiazepines	Y (n=2) N (n=397)	0 (0) 3 (1)
ANY (of five drug types)	Y (n=88) N (n=313)	44 (50) 36 (12)

Participants of the full interview (N=4227) were asked if they were planning to consume any substances other than alcohol during the rest of their night out. A minority (n=317, 7%) of these reported that they were planning to use at least one drug type. Table 23 lists the proportions of these participants according to sex. The only significant differences between males and females were for ecstasy (females more likely; $\chi^2=5.52$, $p=0.019$) and cannabis (males more likely; $\chi^2=5.83$, $p=0.016$).

Table 23 Self-reported anticipated use of substances other than alcohol during the rest of the night, by sex

Drug	TOTAL N=317 n (%)	Male N=237 [†] n (%)	Female N=76 [†] n (%)
Ecstasy	115 (36)	77 (32)	36 (47)
Cocaine	61 (19)	47 (20)	41 (18)
Methamphetamine*	53 (17)	35 (15)	17 (22)
Pharmaceutical stimulants**	5 (2)	4 (2)	1 (1)
Ketamine	1 (<1)	0 (0)	1 (1)
Benzodiazepines	1 (<1)	1 (<1)	0 (0)
GHB	0 (0)	—	—
LSD	8 (3)	8 (3)	0 (0)
Cannabis	121 (38)	99 (42)	20 (26)
Opiates***	2 (1)	1 (<1)	1 (1)
Mephedrone	0 (0)	—	—
Other****	11 (3)	9 (4)	2 (3)

*Refers primarily to speed powder, crystal methamphetamine/'ice', amphetamine liquid, and methamphetamine base

**Includes: dexamphetamine and ritalin

***Includes: heroin, morphine, endone, codeine

****Includes: 'whatever/anything' and refused to/did not specify

[†]Missing gender data for four participants who reported planning to consume any drugs during the rest of the night

Other substance use and experience of aggression/harm

Table 24 shows reported use of illicit drugs on the night of interview, and reported aggressive and offending behaviour in the three months prior to interview. The findings show that people who report illicit drug use are significantly more likely to report having engaged in aggressive and offending behaviour as well as experiencing more harm in terms of injury or accidents.

Table 24 Use of illicit drugs and reported aggressive and offending behaviour in the past three months

	Illicit drug use					
	Yes		No		Chi-square	p
	N	%	N	%		
TOTAL	524		3,303			
Involved in any aggression around licensed venues last three months?	244	22.8	891	15.7	37.6	0.000
Physical aggression	172	16	546	9.6	45.95	0.000
Verbal aggression	132	12.3	486	8.5	18.33	0.000
Sexual aggression	31	2.9	90	1.6	10.863	0.012
Property Crime	37	7.1	122	3.7	13.39	0.004
Drink-driving	413	24.1	132	12.3	62.396	0.000
Any alcohol-related injury	197	18.7	703	13.1	23.55	0.000

Methods of Getting Home

Table 25 lists participants' self-reported methods of getting home post-interview. Participants most commonly reported planning to catch a taxi (49%). Smaller proportions reported planning to walk (14%), get a lift (eg from family member or friend; 13%) and catch public transport (11%).

Table 25 Participants' self-reported methods of getting home

Method of getting home*	N=6,704 n (%)
Taxi	3,260 (49)
Walk	920 (14)
Getting a lift	842 (13)
Public transport	767 (11)
Drive car/other vehicle	617 (9)
Don't know	235 (4)
Ride bike	27 (<1)
Other**	36 (1)

*Missing data for 100 participants

**Includes: 'plane', 'limo/driver', 'motorhome'

Participants of the full interview who reported planning to drive a car or other vehicle home post-interview (n=373) were asked to rate their driving ability on a scale from 0–10 (10='best'); these participants reported a median driving ability of 10 (range: 0–10). Participants' scores of driving ability are presented in Table 26 according to current night out drinking and illicit drug consumption behaviours and BAC reading. A significant negative correlation was evident between BAC reading and self-rated driving ability ($r=-0.22$, $p<0.001$); that is, self-rated driving ability decreased with increased BAC reading. However, there was no significant correlation between self-rated driving ability and self-reported number of drinks consumed prior to interview ($r=-0.12$,

$p=0.092$). Although six participants who planned to drive home rated their driving ability as 0, only half of these reported consuming any alcohol prior to interview (including one participant who also reported illicit drug consumption).

Table 26 Participants' self-rated driving ability and alcohol consumed, by BAC levels

Self-rated driving ability (0–10)	Consumed alcohol tonight n (%)	Number drinks consumed* Median (range)	Consumed illicit drugs tonight n (%)	BAC reading Median (range)
0 (n=6)	3 (50)	7 (7–11)	1 (17)	0.009 (0–0.10)
2 (n=2)	2 (100)	4.5 (3–6)	1 (50)	0.008 (0–0.02)
3 (n=1)	1 (100)	4	0 (0)	0.023
4 (n=3)	3 (100)	3 (1.5–3)	0 (0)	0.039 (0.01–0.07)
5 (n=5)	5 (100)	5 (1–6)	0 (0)	0.055 (0–0.07)
6 (n=5)	5 (100)	8 (1–14)	1 (20)	0.022 (0–0.06)
7 (n=13)	10 (77)	6 (2–15)	1 (8)	0.037 (0–0.08)
8 (n=22)	19 (86)	3 (1.5–8)	2 (9)	0.007 (0–0.07)
9 (n=27)	22 (81)	2.5 (1–30)	5 (19)	0 (0–0.06)
10 (n=289)	151 (52)	3 (0.5–25)	29 (10)	0 (0–0.17)

*Of those who reported drinking alcohol prior to interview

Aggression and Other Risk Behaviours

Involvement in aggressive behaviours in the last three months

A minority ($n=1,148$, 17%) of the entire sample reported that they had been involved in any form of verbal, physical or sexual aggression in or around licensed venues in the three months prior to interview.

Table 27 lists the prevalence of each type of aggression among the whole sample, according to sex and city/ interview location. Physical (11%) and verbal (9%) aggression were reported to be the most common types experienced by participants during the three months prior to interview, with two percent reporting being involved in sexual aggression during that time. Male respondents were significantly more likely to report being involved in any type of aggression than female participants ($\chi^2=19.28$, $p<0.001$). Specifically, males were significantly more likely to report being involved in physical aggression ($\chi^2=46.78$, $p<0.001$); however, there were no significant differences between males and females relating to being involved in verbal ($\chi^2=3.42$, $p=0.064$) or sexual ($\chi^2=2.94$, $p=0.087$) aggression.

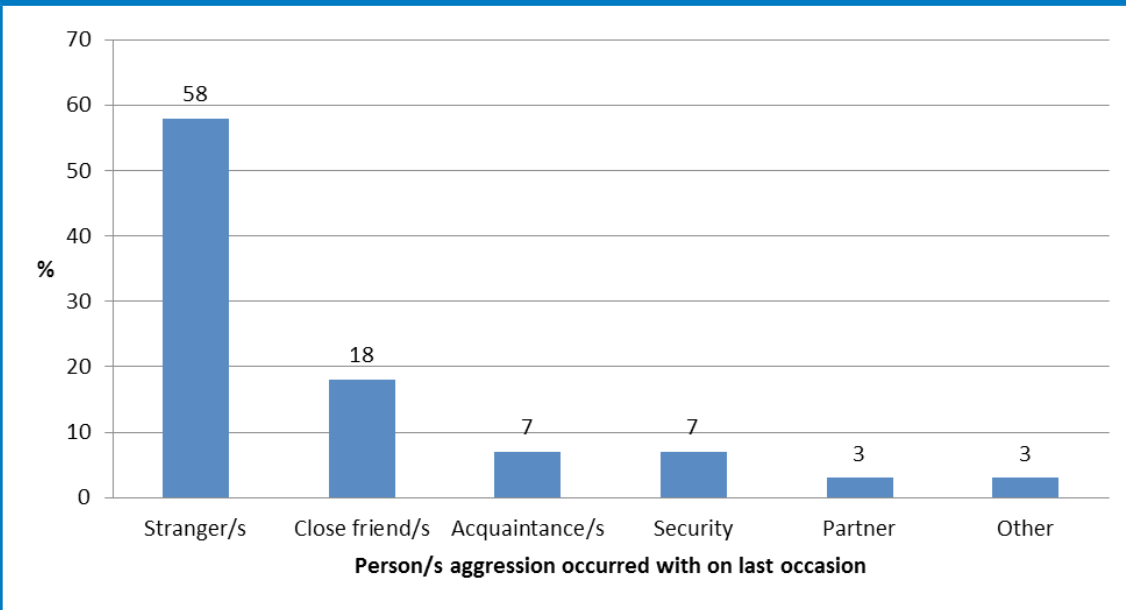
Geelong participants were significantly more likely to report being involved in any type of aggression ($\chi^2=65.08$, $p<0.001$; Table 27). Specifically, they reported higher levels of involvement in verbal ($\chi^2=70.37$, $p<0.001$) and physical ($\chi^2=81.25$, $p<0.001$) aggression than respondents in all other cities. Consistently low proportions of participants reported being involved in sexual aggression across all interview sites.

Table 27 also presents the proportions, by age, of participants who reported being involved in aggressive behaviours during the past three months. Age groups varied significantly in their involvement in any aggressive behaviours ($\chi^2=125.70$, $p<0.001$). This variation related to involvement in verbal aggression ($\chi^2=62.11$, $p<0.001$) and physical aggression ($\chi^2=113.03$, $p<0.001$) in the previous three months; however, there were no significant differences between groups relating to involvement in sexually aggressive behaviours during this time ($\chi^2=8.28$, $p=0.082$). In general, participants aged 18 to 25 years reported substantially higher levels of involvement in aggressive behaviours than older participants. Specifically, a higher proportion of 18 to 19 year olds reported being involved in physical aggression compared with other age groups (15%). In comparison, a higher proportion of 20 to 24 year olds reported being involved in verbal aggression during the previous three months (12%), followed closely by 18 to 19 year olds (11%).

Table 27 Self-reported involvement in aggression in the last three months, by sex, age and city/interview site

Variable	Aggression type			
	ANY n (%)	Verbal n (%)	Physical n (%)	Sexual n (%)
Sex				
Male (n=4,112)	769 (19)	405 (10)	531 (13)	66 (2)
Female (n=2,566)	375 (14)	218 (9)	194 (8)	56 (2)
City/interview site				
Geelong (n=1,255)	283 (22)	179 (14)	204 (16)	37 (3)
Melbourne (n=1,905)	272 (14)	149 (8)	146 (8)	25 (1)
Perth (n=1,214)	193 (16)	65 (5)	111 (9)	17 (1)
Sydney (n=1,536)	302 (19)	165 (11)	203 (13)	33 (1.2)
Wollongong (n=729)	80 (11)	56 (7.7)	52 (7.1)	9 (1)
Age group				
18–19 (n=1,586)	344 (21)	172 (11)	233 (15)	32 (2)
20–24 (n=2,799)	569 (20)	325 (12)	369 (13)	61 (2)
25–29 (n=1,333)	153 (11)	83 (6)	83 (6)	19 (1)
30–39 (n=696)	59 (8)	29 (4)	31 (4)	10 (1)
40+ (n=230)	16 (7)	13 (6)	7 (3)	0 (0)
TOTAL (N=6,804)	2,073 (49)	1,468 (35)	1,663 (39)	239 (6)

Participants who completed the full interview were asked to estimate the number of times they had been involved in any aggressive behaviours in the previous three months; these respondents reported being involved in a median of one aggressive incident during that time (range: 1–70). Male and female participants did not differ significantly in the number of times they had been involved in aggressive behaviours ($z=-0.326$, $p=0.745$). These participants ($N=622$) also explained with whom this most recent aggression had occurred (Figure 22). Most ($n=358$, 58%) reported last experiencing aggression with strangers. There was no significant difference between male and female participants relating to prevalence of aggression with strangers, acquaintances, security personnel or partners; however, female respondents who reported being involved in aggressive behaviours in the previous three months were significantly ($\chi^2=4.94$, $p=0.026$) more likely to report experiencing aggression with close friends.

Figure 22 Participants (N=622) reported last experiencing aggression with in the past three months

At total of 448 participants of the full interview commented on whether alcohol had been consumed prior to their last aggressive episode. Most (n=392, 88%) reported that alcohol had been used. The median number of standard drinks consumed on this occasion was nine (range: 1–45). Although there was no significant difference between male and female respondents with regard to the prevalence of alcohol consumption on the last occasion of aggression ($\chi^2=0.07$, $p=0.793$), male participants reported consuming significantly more standard drinks when this occurred (median of 10 versus 6 standard drinks; $p<0.001$). There were no significant differences between cities/interview locations with regard to the prevalence of alcohol consumption on the last occasion of aggression ($\chi^2=5.58$, $p=0.233$).

The 612 participants who completed the full interview commented on whether illicit drugs had been consumed the last time they had been involved in aggressive behaviours. Only a minority (n=55, 9%) reported that this had occurred. The most common illicit substances reportedly consumed by these participants were: ecstasy (n=18, 33%), methamphetamine (n=16, 29%), cannabis (n=14, 25%) and cocaine (n=6, 11%). Participants who reported illicit drug consumption on the night of interview were more likely to report being involved in any aggressive behaviours during the previous three months (23%) compared with participants who had not consumed any drugs (16%; $\chi^2=32.52$, $p<0.001$).

Reports of witnessing aggressive behaviours in the last three months

Less than half (n=2073, 49%) the participants who completed the full interview reported witnessing any verbal, physical or sexual aggression in or around licensed premises in the three months prior to survey. These participants most commonly reported witnessing physical and verbal aggression (Table 28).

Table 28 Different types of aggression witnessed in the last three months by sex and city/interview location

Variable	Aggression type			
	ANY n (%)	Verbal n (%)	Physical n (%)	Sexual n (%)
Sex*				
Male (n=2,443)	1,234 (51)	872 (36)	1,004 (41)	144 (6)
Female (n=1,742)	820 (47)	583 (33)	641 (37)	92 (5)
City/interview site*				
Geelong (n=300)	157 (52)	109 (39)	131 (44)	22(7)
Melbourne (n=1,666)	803 (48)	574 (34)	620 (37)	96 (6)
Perth (n=425)	224 (53)	130 (31)	188 (44)	15 (4)
Sydney (n=1,080)	522 (48)	369 (34)	427 (40)	53 (5)
Wollongong (n=719)	359 (50)	281 (39)	289 (40)	52 (7)
Age group*				
18–19 (n=814)	475 (58)	312 (38)	391 (48)	44 (5)
20–24 (n=1,724)	934 (54)	654 (38)	775(45)	112 (7)
25–29 (n=932)	407 (44)	307 (33)	307 (33)	58 (6)
30–39 (n=506)	191 (38)	148 (29)	144 (28)	19 (4)
40+ (n=186)	58 (31)	39 (21)	41 (22)	4 (2)
TOTAL (N=4,227)	2,073 (49)	1,468 (35)	1,663 (39)	239 (6)

*Missing gender data for 42 participants; missing location data for 37 participants; missing age data for 23 participants

Male participants were significantly more likely to witness any form of aggression than females ($\chi^2=4.81$, $p=0.028$). Specifically, they were significantly more likely to have witnessed physical aggression in the previous three months ($\chi^2=7.88$, $p=0.005$); however, there were no significant differences between male and female participants relating to witnessing verbal ($\chi^2=2.22$, $p=0.136$) or sexual ($\chi^2=0.72$, $p=0.397$) aggression during that time. Although a smaller proportion of Melbourne participants reported witnessing physical aggression ($\chi^2=9.95$, $p=0.041$), there were no overall differences between respondents across interview sites relating to witnessing any form of aggression during the three months before interview.

Younger participants more commonly reported witnessing aggressive behaviours during the last three months compared with older respondents ($\chi^2=106.18$, $p<0.001$). For example, 58 percent of participants aged 18–19 reported witnessing any aggressive behaviours during this time, compared with 31 percent of those aged 40 years or more. Younger participants were more likely to report witnessing *all* types of aggression in the previous three months: verbal ($\chi^2=35.64$, $p<0.001$), physical ($\chi^2=112.06$, $p<0.001$) and sexual ($\chi^2=10.57$, $p=0.032$).

Alcohol-related injuries and Involvement in risk behaviours in the last three months

Table 29 lists participants' experience of alcohol-related harms and involvement in alcohol-related risk behaviours in the three months prior to interview. Of the entire sample, 14 percent reported incurring or causing any alcohol-related accidents or injuries during that time. Female participants were significantly more likely to report this than male participants ($\chi^2=5.51$, $p=0.019$). In contrast, of the participants completing the full interview, male respondents were significantly more likely than female interviewees to report causing any property damage while alcohol-intoxicated ($\chi^2=16.47$, $p<0.001$) and to report having driven under the influence of alcohol ($p<0.001$) in the three months prior to interview. Male participants who completed the full interview were also significantly more likely than female participants to report having been refused service/

entry or been ejected from a licensed venue in the previous three months due to intoxication ($\chi^2=93.23$, $p<0.001$).

Significant variation occurred between city/interview location relating to incurring/causing alcohol-related injuries in the previous three months ($\chi^2=16.61$, $p=0.002$). This was most commonly reported among Geelong participants. Similarly, participants in Geelong completing the full interview reported the highest level of involvement in property crime/damage in the preceding three months ($\chi^2=26.28$, $p<0.001$), and were more likely to report having driven under the influence of alcohol during this time ($\chi^2=16.34$, $p=0.003$). In contrast, respondents in Sydney (participating in the full interview) were more likely to report being refused service/entry or being kicked out of licensed venues due to alcohol intoxication in the three months prior to interview ($\chi^2=14.24$, $p=0.007$).

Table 29 Experience of alcohol-related harms and involvement in risk behaviours last three months, by sex and city/interview location

	TOTAL N=6,454 n (%)	Participant sex		City/interview site				
		Male N=3,970† n (%)	Female N=2,464† n (%)	Geelong N=1,213 n (%)	Melbourne N=1,831 n (%)	Perth N=1,243 n (%)	Sydney N=1,392 n (%)	Wollongong N=705 n (%)
Incurred or caused any alcohol-related accidents or injuries last three months	907 (14)	526 (13)	378 (15)	205 (17)	223 (12)	178 (14)	179 (13)	110 (16)
More than one month ago*	216 (24)	129 (25)	87 (23)	27 (13)	59 (26)	51 (29)	40 (22)	38 (35)
In the last month*	214 (24)	131 (25)	82 (22)	41 (20)	68 (30)	44 (25)	38 (21)	21 (19)
In the last fortnight*	114 (13)	71 (14)	43 (11)	42 (20)	22 (10)	28 (16)	14 (8)	6 (5)
In the last week*	221 (24)	115 (22)	105 (28)	60 (30)	47 (21)	43 (24)	42 (23)	22 (20)
Tonight*	48 (5)	25 (5)	22 (6)	19 (9)	7 (3)	7 (4)	13 (7)	2 (2)
Unspecified timeframe*	94 (10)	55 (10)	39 (10)	16 (8)	20 (9)	5 (3)	32 (18)	21 (19)
Caused any property damage while alcohol-intoxicated last three months	n=3,838** 159 (4)	n=2,240* 118 (5)	n=1,576* 41 (3)	n=257 23 (9)	n=1,527 60 (4)	n=424 9 (2)	n=907 27 (3)	n=697 39 (6)
More than one month ago***	44 (28)	28 (24)	16 (39)	4 (17)	16 (27)	3 (33)	9 (33)	12 (31)
In the last month***	41 (26)	28 (24)	13 (32)	4 (17)	17 (28)	2 (22)	10 (37)	8 (21)
In the last fortnight***	27 (17)	23 (19)	4 (10)	7 (30)	8 (13)	2 (22)	3 (11)	7 (18)
In the last week***	33 (21)	25 (21)	8 (20)	5 (22)	13 (22)	2 (22)	5 (19)	8 (21)
Tonight***	9 (6)	9 (8)	0 (0)	3 (13)	5 (8)	0 (0)	0 (0)	0 (0)
Unspecified timeframe***	5 (3)	5 (4)	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	4 (10)

Table 29 (continued)

	TOTAL N=6,454 n (%)	Participant sex		City/interview site				
		Male N=3,970 [†] n (%)	Female N=2,464 [†] n (%)	Geelong N=1,213 n (%)	Melbourne N=1,831 n (%)	Perth N=1,243 n (%)	Sydney N=1,392 n (%)	Wollongong N=705 n (%)
Driven under the influence of alcohol last three months	n=3,895** 547 (14)	n=2,262 380 (17)	n=1,606 162 (10)	n=263 48 (18)	n=1,543 240 (16)	n=424 55 (13)	n=940 100 (11)	n=698 102 (15)
More than one month ago***	132 (24)	94 (25)	35 (22)	14 (29)	63 (26)	8 (15)	26 (26)	21 (21)
In the last month***	149 (27)	99 (26)	49 (30)	11 (23)	61 (25)	16 (29)	27 (27)	33 (32)
In the last fortnight***	62 (11)	39 (10)	23 (14)	5 (10)	26 (11)	7 (13)	13 (13)	11 (11)
In the last week***	149 (27)	104 (27)	44 (27)	9 (19)	71 (30)	17 (31)	24 (24)	26 (25)
Tonight***	38 (7)	33 (9)	4 (2)	8 (17)	14 (6)	7 (13)	6 (6)	3 (3)
Unspecified timeframe***	18 (3)	11 (3)	7 (4)	1 (2)	5 (2)	0 (0)	4 (4)	8 (8)
Refused service/entry or kicked out of licensed venue due to intoxication last three months	n=3,931** 724 (18)	n=2,296 536 (23)	n=1,608 180 (11)	n=266 46 (17)	n=1,556 264 (17)	n=424 62 (15)	n=963 208 (21)	n=697 140 (20)
If yes, median (range)	1 (1–50)	1 (1–50)	1 (1–20)	1 (1–10)	1 (1–27)	1 (1–10)	1 (1–50)	2 (1–20)

*Of those who had incurred/caused alcohol-related injuries in the last three months

**Question only asked of participants of the full interview

***Of those who reported causing any property damage last three months

Summary of trends

Survey teams successfully carried out the patron interview study across all sites, resulting in the largest sample of people attending licensed venues ever interviewed ($n=6,916$). No safety incidents were recorded, demonstrating that the methods and training undertaken were both effective and safe. A high response rate of 90.2 percent was achieved across all sites, suggesting that the sample accessed was representative of most of the people who normally go out to night-time entertainment districts (NEDs) in Australia.

Across all cities, BAC levels rose throughout the night, although Sydney showed a spike around 9 pm, which can be attributed to a different group of drinkers (ie people who were on their way home from office drinks or dinners). Melbourne and Perth showed the highest mean BAC levels at 4 am, although Geelong showed the highest mean BAC level across the whole night. Of interest is the decrease in BAC level around 1 am in Wollongong when venues were closing.

Sites were similar on most of the variables investigated, although participants in Geelong were significantly more likely to report being involved in any type of aggression ($\chi^2=65.08$, $p<0.001$). Specifically, they reported higher levels of involvement in verbal ($\chi^2=70.37$, $p<0.001$) and physical ($\chi^2=81.25$, $p<0.001$) aggression than respondents in all other cities. Increased rates of aggression in Geelong may be associated with the younger age of Geelong NTE patrons. Younger age groups at all sites were more likely to report having been involved in aggression, with Geelong recording the lowest median age (21) of all sites. Consistently low proportions of participants reported being involved in sexual aggression across all interview sites.

Interviewees in all cities reported high levels of pre-drinking and said that they did this primarily because of price. In line with previous research (Hughes, 2007), people who pre-loaded, experienced higher levels of violence. Other drug use was comparatively low in all study sites, although Geelong showed higher self-reported drug use than other sites. Around one in six (16%) of the overall sample reported using substances other than alcohol during their current night out (prior to interview).

The findings suggest that self-report can provide very different data from objective testing. Based on the testing results, it can be confidently concluded that slightly more than 20 percent of the people attending NEDs in Australia had used some form of illicit drug, with an extreme figure of 40 percent. Consistent with prior research, people who reported other substance use were more likely to experience violence and injury.

Conclusion

Overall, the findings of this study show striking similarities across the sites studied and the many thousands of people interviewed. General levels of intoxication are moderate across the evening. However, there is a consistent trend across the cities of escalating intoxication throughout the night. Larger cities show high to very high levels of intoxication after 1 am. The use of energy drinks and illicit drugs are both significantly associated with increased experience of aggression and injury; however, pre-drinking before going out remains the strongest predictor of harm and intoxication.

Venue Observations

Observation sessions were undertaken in all cities fortnightly on a Friday or Saturday night (on the alternate weekends to interviews). Teams of two or three observers spent four to five hours within specified licensed venues. Major venues in entertainment districts were selected to cover all venues in smaller cities (Perth, Geelong, Wollongong) and within specified entertainment districts in Melbourne and Sydney. Site-specific locations with detailed maps are presented in the introduction of this report pp. 8–19.

Methods

Liquor licensing authorities often use audits to assess compliance and to identify current practice (McLeod, 2002). However, audits are often inadequate because they are primarily concerned with legislative requirements rather than evidence-based environmental harm (Daly, et al., 2002); they rely on self-reporting; are often completed during non-peak times (Briscoe & Donnelly, 2001); and frequently are dependent on resources. Thorough observations at peak times are required to adequately assess potential harms within drinking environments. Many studies have assessed alcohol-serving practices using covert observations either to describe practices or to evaluate interventions (Andreasson, et al., 2000; Homel, et al., 2004; Miller, et al., 2012). Given this, the main aims of the venue observations were to examine:

- the levels of intoxication of people in and around licensed venues;
- the frequency and situational correlates of physical, verbal and sexual aggression;
- the relationship between time of evening, patron drinking behaviours, level of intoxication and harmful or risky behaviour;
- the relationship between licence type/trading hours and level of intoxication and harmful or risky behaviour;
- the prevalence of consuming illicit drugs (or prescription drugs being used illegally), level of observable intoxication obviously not from alcohol, and harmful or risky behaviour;
- the relationship of consuming energy drinks, alcohol and level of intoxication, with harmful or risky behaviour;
- venue-specific factors such as a venue's total capacity and operating capacity, security and bar staff characteristics, serving practices—particularly for intoxicated patrons, alcohol promotions and entertainment provided to patrons; and
- the presence and behaviour of police officers in and around licensed venues.

A range of venues in each city was selected for observation sessions based on opening times and size. Three types of venues were selected:

- large mainstream pub—closing time 1–3 am;
- bars—closing time 1–5 am; and
- nightclubs (DJ-focused)—closing time 3 am to 24 hour trading.

Design and setting

Pairs or groups of three researchers carried out sessions of structured observations to ensure inter-rater reliability. Where possible, male/female pairs were used to look like normal customers socialising. Researchers posed as typical customers and wore clothing consistent with the venue's dress code and usual patron attire. Both researchers completed observation checklists independently, without consulting each another about what they were recording. Each set of data was treated as an independent session of observation for the purpose of analysis.

Sample

The sample for the observations was made up of venues licensed to serve alcohol for consumption on their premises with either a hotel or nightclub licence, and located within the entertainment precinct of each city. A total of 68 unique venues were observed during the data collection period between December 2011 and July 2012. The Melbourne team visited the largest number of venues ($n=26$), followed by Sydney ($n=17$), Perth ($n=12$), Wollongong ($n=7$) and Geelong ($n=6$). The largest proportion of observations was conducted in 'bar' type venues (43.5%); the remainder were carried out in 'nightclub' type venues (31.6%) and 'large, mainstream pubs' (24.8%).

Each observation period lasted between four and five hours, varying from start times at 6 pm to 2 am and finishing between 10 pm and 6 am. Each team visited one venue per night of observation (ie teams did not move from venue to venue). Each hour, observers completed a number of observation checklists on their iPod Touch devices.

Observations were conducted as unobtrusively as possible to blend into the setting. Researchers were given extensive safety training, as well as training on how to covertly complete the observation checklists. All data were captured using iPhones or iPod Touch devices. Thus, when using the iPod Touch researchers appeared as though they were using their mobile phone. Checklists were completed in ten to fifteen minutes, with the researchers putting their iPod Touch on the table or in their bag every few minutes, to ensure they did not appear uncharacteristically focused on their phone for a long period of time. Researchers carried an information card detailing the aims and scope of the research in the unlikely event that patrons or staff might approach them with anger or suspicion. However, these were not required during the project.

Each session of observation involved completing four separate forms:

- Standard hourly form—involving questions about entry practices, patron characteristics, venue capacity and density, patron alcohol consumption patterns, alcohol promotions, observations of patron intoxication, signs of patron drug use, patterns of patron energy drink use (with and without alcohol), serving practices of staff, rating of staff friendliness and presence and activity of police inside and outside the venue.
- Hourly drug use form—involving questions about particular groups of people who were exhibiting signs of drug use such as how many people in the group, their gender and age, what signs of drug use were noticed and what behaviours they were engaging in. This form was only completed if there were new groups of drug users in the venue, or repeated hourly if there were existing groups who had continued using drugs in the venue.
- Hourly energy drink form—involving questions about particular groups of people who were consuming energy drinks such as how many people in the group, their gender and age, what signs of energy drink use were noticed and what behaviours they were engaging in. This form was only completed if there were new groups of energy drink users in the venue, or repeated hourly if there were existing groups who had continued their energy drink use in the venue.
- Aggressive incident form—involving questions about specific incidents of physical aggression, non-physical aggression such as arguments, and sexually aggressive incidents or unwanted sexual attention. This form was only completed if there were specific incidents of aggression in the past hour. Questions were asked about the nature of the incident, the number and characteristics of people involved, where in the venue it occurred, signs of alcohol and/or drug involvement in the incident and details of how the incident was resolved.

All forms had a number of fields where free text could be added. Observers were encouraged to use these forms as much as possible to identify behaviours that might not be captured by the structured checklist, for example, problems with gaining entry, specific incidents of intoxication or other behaviour, and security of staff practices.

Limitations

It is important to consider the limitations with using covert observations to measure venue patron behaviour. Each venue was typically observed for four or five hours, thus some practices may not have been observed because they occurred after observers had left the venue. These limitations were minimised by observing the venues on multiple occasions, and staggering the times of observation for each venue across the study period.

Results

Total Observations Conducted

Table 30 demonstrates the total frequency of hourly observations recorded per research site, and the types of venues targeted for observation. In total, 898 hourly venue observations were held across all sites, the largest proportion being conducted in 'bar' type venues (43.5%). The remainder were held in 'nightclub' type venues (31.6%) and 'large, mainstream pubs' (24.8%).

Perth observed the highest proportion (43.6%) of large mainstream pub type venues. Wollongong recorded the highest amount of observations for 'bar' type venues—78.3 percent of their observation data. Geelong had the highest proportion of 'nightclub' observations, with 60.6 percent.

Table 30 City vs. venue classification distribution

City		Large mainstream pub	Bar	Nightclub	Total
Geelong	n	36	20	86	142
	% of specified venues at site	25	14	61	100
Melbourne	n	82	102	88	272
	%	30	38	32	100
Perth	n	65	35	49	149
	%	44	24	33	100
Sydney	n	10	126	61	197
	%	5	64	31	100
Wollongong	n	30	108	0	138
	%	22	78	0	100
TOTAL	n	223	391	284	898
	% of Total	25	44	32	100

Data Collection Period

Figure 23 (below) shows the observation period for data collection in all sites. All observations were held between December 2011 and July 2012.

Observations in Wollongong were held between December 2011 and May 2012; in Sydney between March and May 2012; in Perth from January to April 2012; in Melbourne between December 2011 and May 2012; and in Geelong from December 2011 to July 2012.

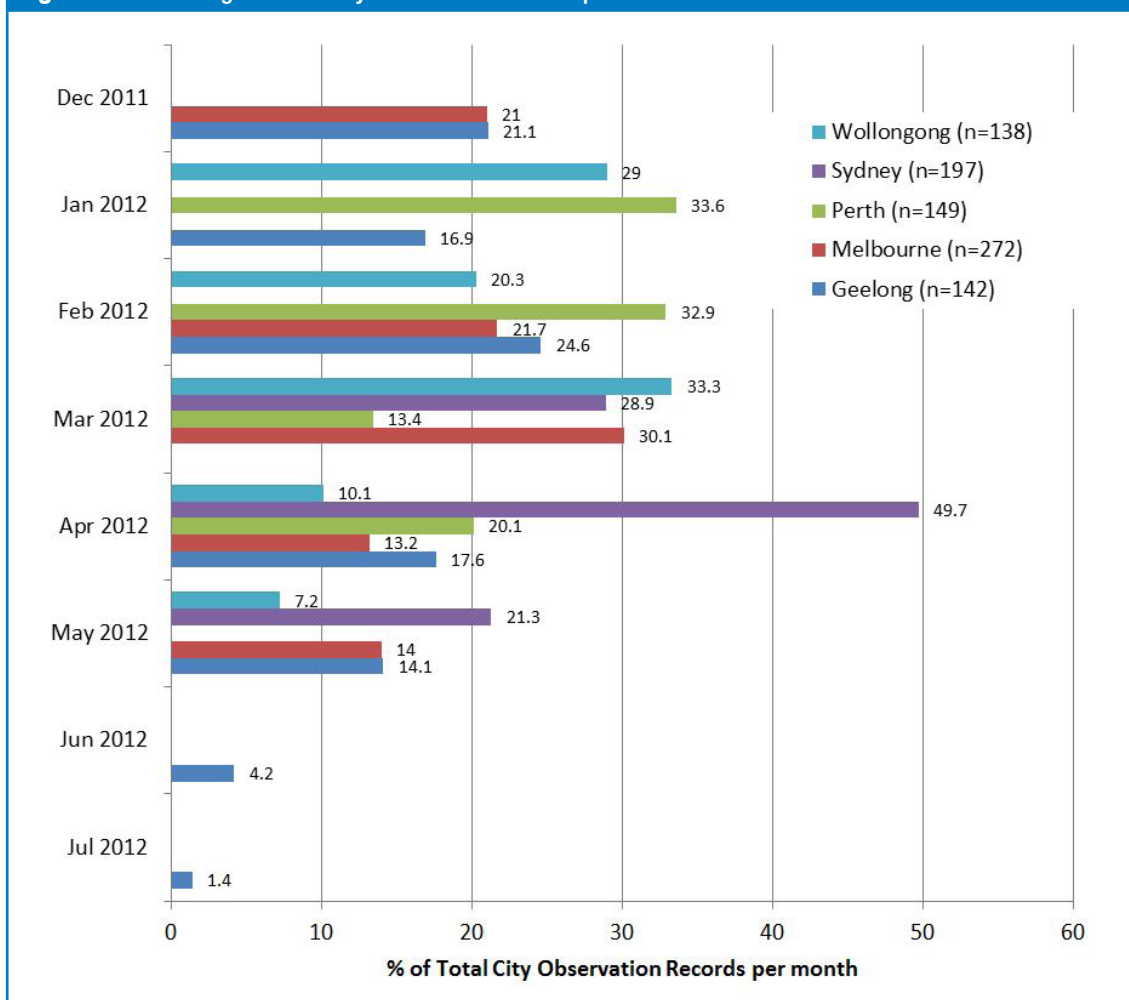
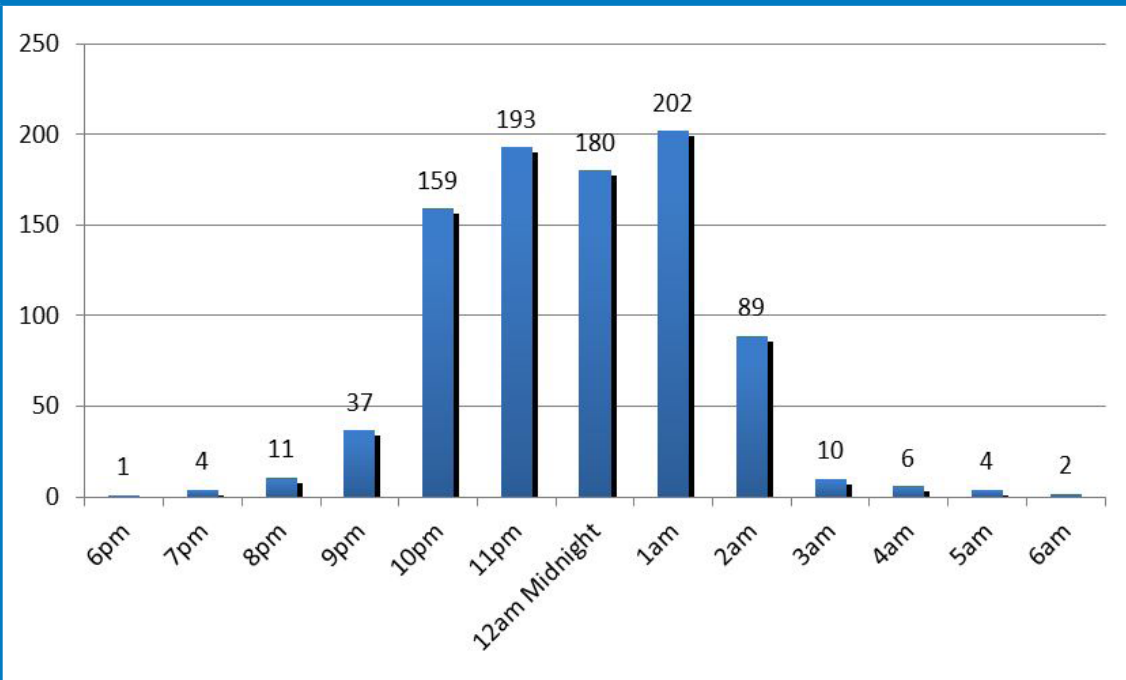
Figure 23 Percentage of total city observation records per month

Figure 24 shows the distribution of hourly observations, separated for all sites by hour. All observations were conducted between 6 pm and 6 am. Most (91.6%) were conducted between 10 pm and 3 am.

Figure 24 Number of observations per hour of day

Venue Breakdown

Table 31 (below) displays the total frequency of observations across all research sites.

Patron Information

Each hour observers collected summary information about patron demographics and density within each licensed venue. Data included total numbers of patrons in each venue at observation time, estimated percentage of venue patron capacity, percentage of patrons who were male, and percentage of patrons who appeared to be under 25. Data are provided in Table 31 below.

Table 31 Venue classification vs. patron descriptors by hour

Descriptor	Large mainstream pub	Bar	Nightclub
Mean number of total venue patrons			
10–11 pm	268	145	136
11 pm–12 am	316	210	204
12–1 am	290	202	328
1–2 am	314	175	379
2–3 am	187	152	254
Mean percentage of venue capacity (%)			
10–11 pm	55.94	39.70	28.21
11 pm–12 am	51.25	55.82	44.44
12–1 am	53.65	54.11	59.02
1–2 am	46.85	50.11	66.26
2–3 am	43.00	53.14	51.86
Mean percentage of male patrons (%)			
10 –11 pm	59.66	58.16	56.94
11 pm–12 am	56.11	59.78	56.18
12–1 am	58.93	57.95	56.25
1–2 am	62.50	58.26	56.35
2–3 am	71.50	62.76	58.45
Mean percentage of patrons <25yrs			
10–11 pm	56.36	48.16	59.44
11 pm–12 am	57.14	51.70	64.42
12–1 am	54.78	48.41	69.27
1–2 am	54.96	50.44	63.71
2–3 am	63.20	39.72	62.39

As expected, mainstream pub and bar venues typically experienced peak patronage earlier than nightclub type venues, although most had a sustained peak across several hours. Pubs and bars experienced peak patronage between 11 pm and 2 am and 11 pm and 1 am respectively, with the highest mean of $n=316$ at 11 pm for pubs and $n=210$ at 11 pm for bars. Nightclub type venues experienced peak patronage between 1 and 2 am, with a mean $n=379$. This illustrates the trend of pubs and bars serving as ‘feeder’ venues in which patrons consume alcohol prior to attending late-night club-style venues.

For all venue types, most patrons were male at all hours of venue observation. However, attendance rates of male and female patrons differed depending on the type of venue over the course of a night. Bar and nightclub type venues saw a consistent ratio of male and female patrons over time. Bar venues fluctuated between 58 percent male patrons at 10 pm to 63 percent at 2 am, while nightclub venues fluctuated even less from 57 percent male patrons at 10 pm to 58 percent at 2 am. However, mainstream pub type venues saw a substantial increase in male patron ratio as the night progressed, increasing from 57 percent at 11 pm to 72 percent at 2 am.

Patron age also fluctuated differently according to venue type. At mainstream pubs and nightclub type venues, patrons aged under 25 years represented most attendants at all times of the night, fluctuating between 55 percent and 63 percent at pubs and 59 percent and 69 percent at nightclubs, with the younger demographic generally increasing in proportion over the night. The proportion of patron under 25 in bars hovered closer to 50 percent, reducing to 40 percent between 2 and 3 am as the younger patrons most likely moved on to late night-club type venues.

In sum, licensed venues in night-time entertainment districts receive peak patronage between 11 pm and 2 am. As nights progress, the proportion of male patrons, and patrons under 25 years old, increases. The size of the increase depends on the type of venue.

Patron Intoxication

Figure 25 to Figure 28 (below) reflect observers' ratings of patron intoxication over time, at each site. Observers were asked to allocate an overall rating of patron intoxication within venues during observation; low, medium, high or no visible signs of intoxication. Consistent trends of increasing intoxication during later hours are visible for all observation sites. Ratings of 'low' or 'no visible intoxication' reduce consistently across all sites approaching midnight. From midnight to 1 am appears to be a consistent point at which patron intoxication is more commonly rated as being moderate or high.

Inversely, prior to 1 am, 'high' patron intoxication occurred on less than 15 percent of observations across all sites, with the exception of Wollongong, which reaches equivalent levels of moderate/high intoxication one hour earlier than other sites. As only one observation record was submitted after 2 am for Wollongong, records later than 2 am are not included for that city. Similarly, because only two observation records were submitted after 2 am for the Perth site, records later than 2 am are not included for the city.

Figure 25 Patron intoxication trends by hour: no visible intoxication

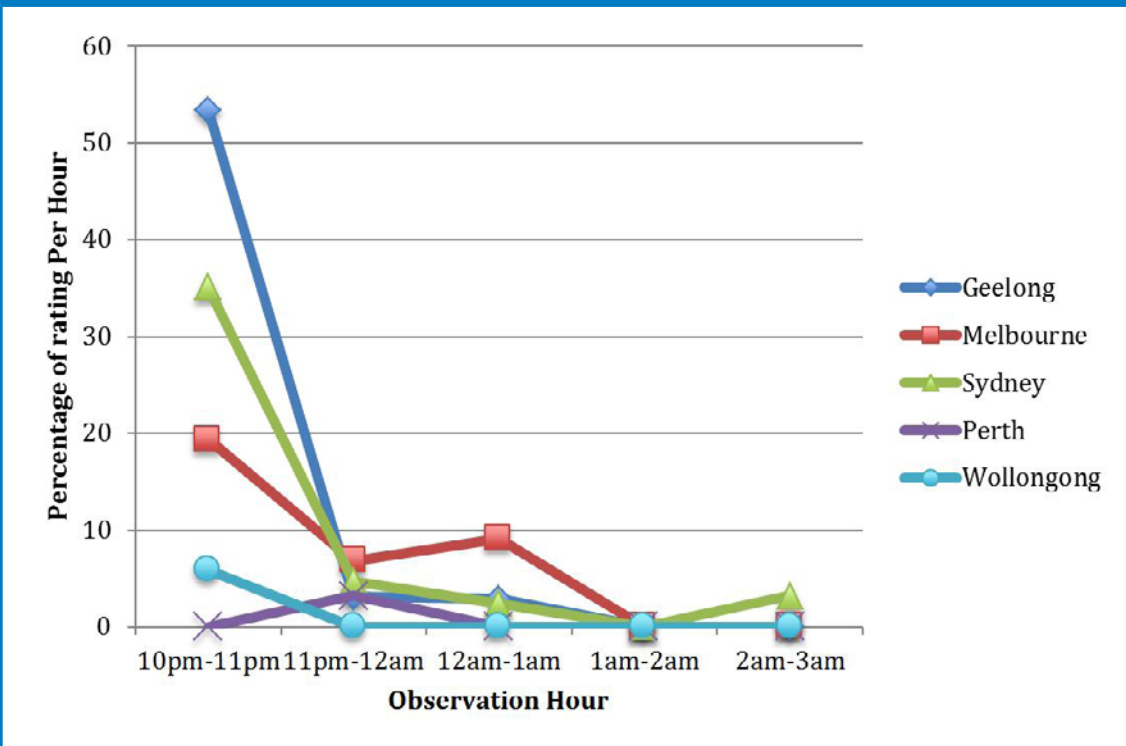


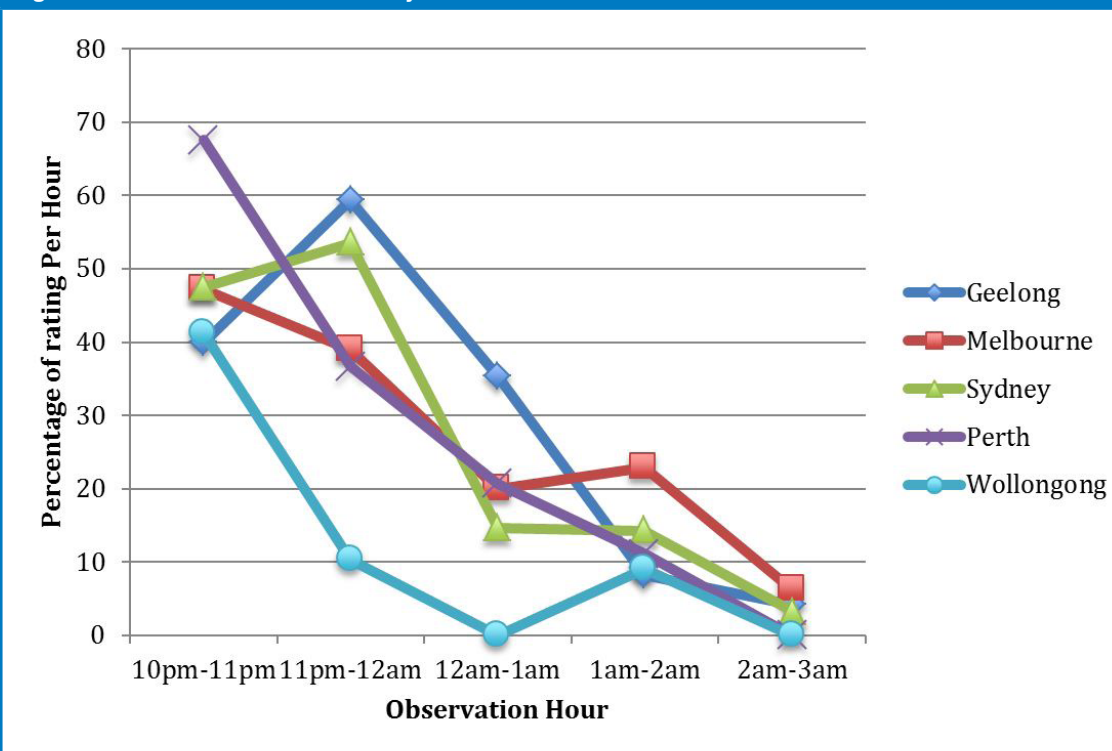
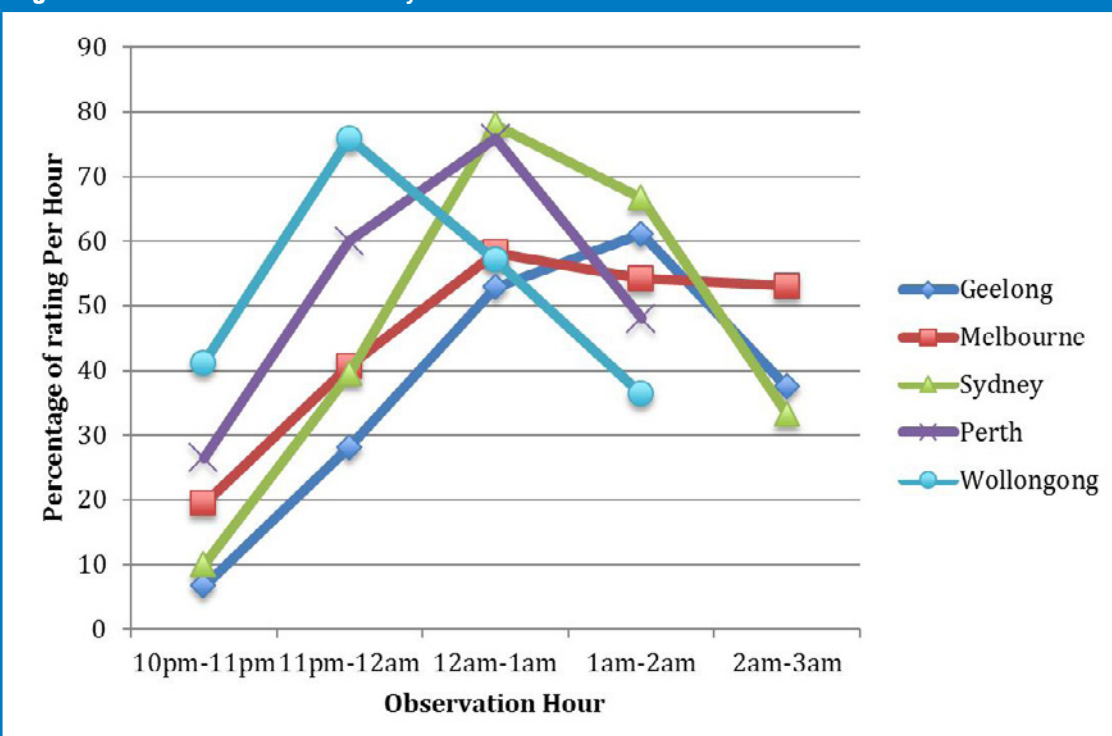
Figure 26 Patron intoxication trends by hour: low visible intoxication**Figure 27** Patron intoxication trends by hour: moderate visible intoxication

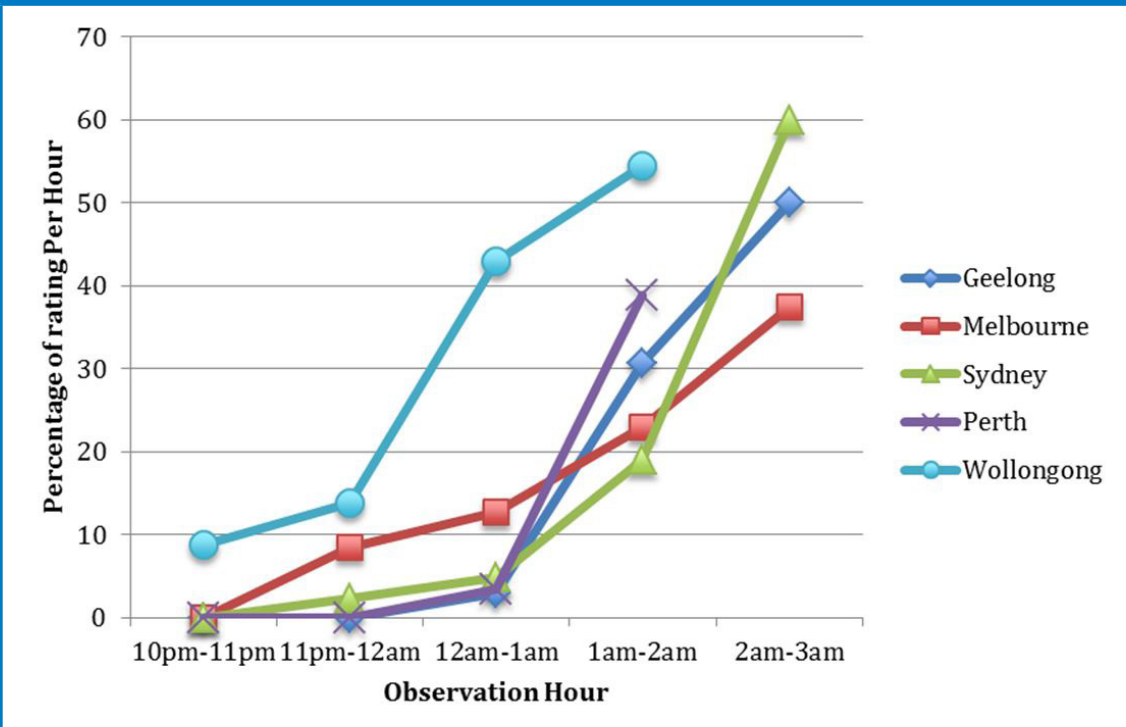
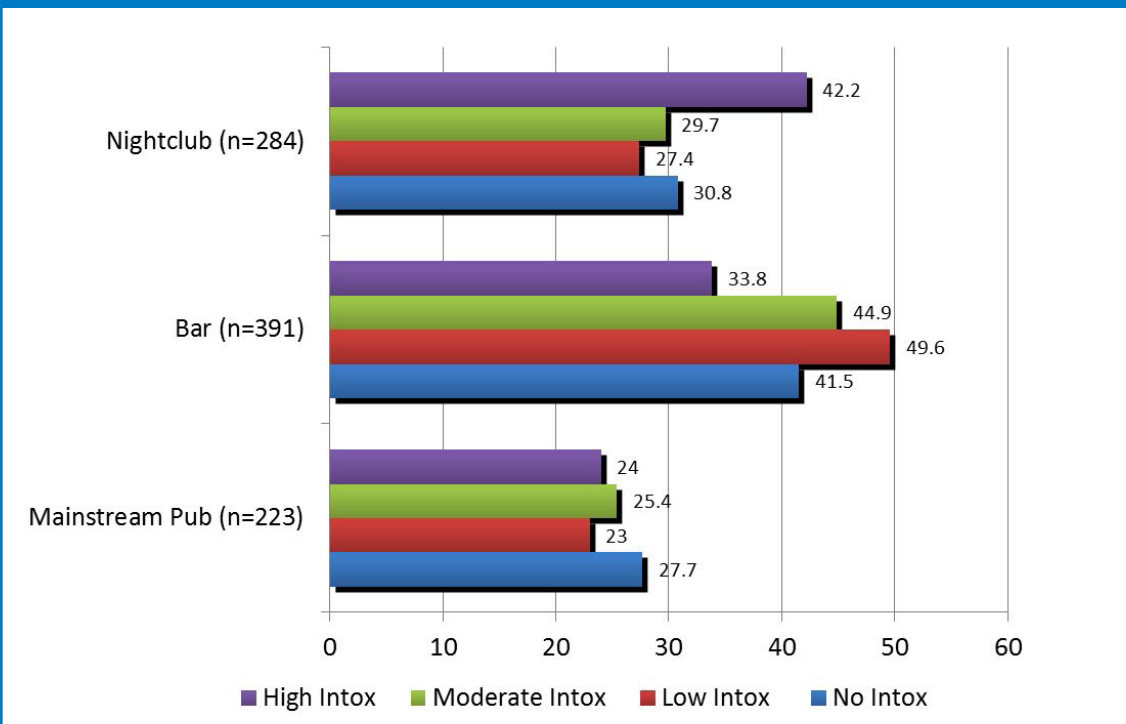
Figure 28 Patron intoxication trends by hour: high visible intoxication

Figure 29 (below) shows the proportion of observed patron intoxication ratings assigned in each type of venue. Nightclub type venues had a substantially larger proportion of highly intoxicated patrons (42.2%, compared with 33.8% for bars and 24% for mainstream pubs).

Figure 29 Frequency of intoxication rating per venue classification*

*26 cases were missing patron intoxication ratings.

Several key markers of overall patron intoxication were noted during all hourly venue observations. In addition to an overall categorical rating of intoxication, observers noted the overall percentage of patrons demonstrating *any* intoxication signs. Further, they noted the percentage of patrons who appeared too intoxicated to remain in the venue, and the percentage of patrons showing signs of illicit substance use or intoxication from substances other than alcohol.

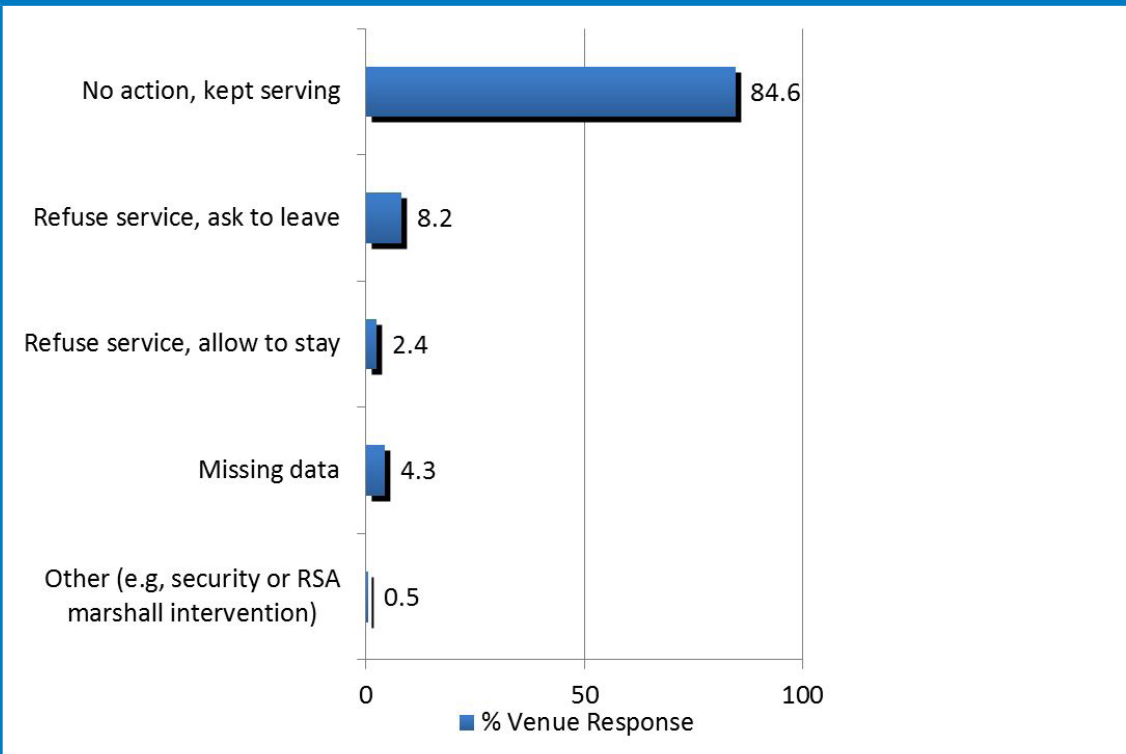
All available measures of patron intoxication increased over time across all venue types. By 2 am, the average proportion of patrons exhibiting any intoxication sign was between 71 and 75 percent, while between 10 and 25 percent appeared too intoxicated to remain in the venue. These rates were consistent across all types of venue.

Rates of patrons showing signs of illicit substance use also increased by hour, across all types of venue. However, nightclub type venues saw a substantially higher proportion of patrons exhibiting signs of illicit drug use. By 2 am, pub and bar venues saw five and six percent of patrons showing illicit drug use signs, respectively. In nightclub type venues, this proportion had increased to 22 percent.

Observers were also required to monitor the drinking behaviour of highly intoxicated patrons. Overall, observers recorded n=208 incidents of a highly intoxicated patron ordering drinks from a bar service area and recorded the venue response. Figure 30 below shows the distribution of venue responses to highly intoxicated patrons attempting to buy drinks. For the overwhelming majority of instances, highly intoxicated patrons were served alcohol as usual.

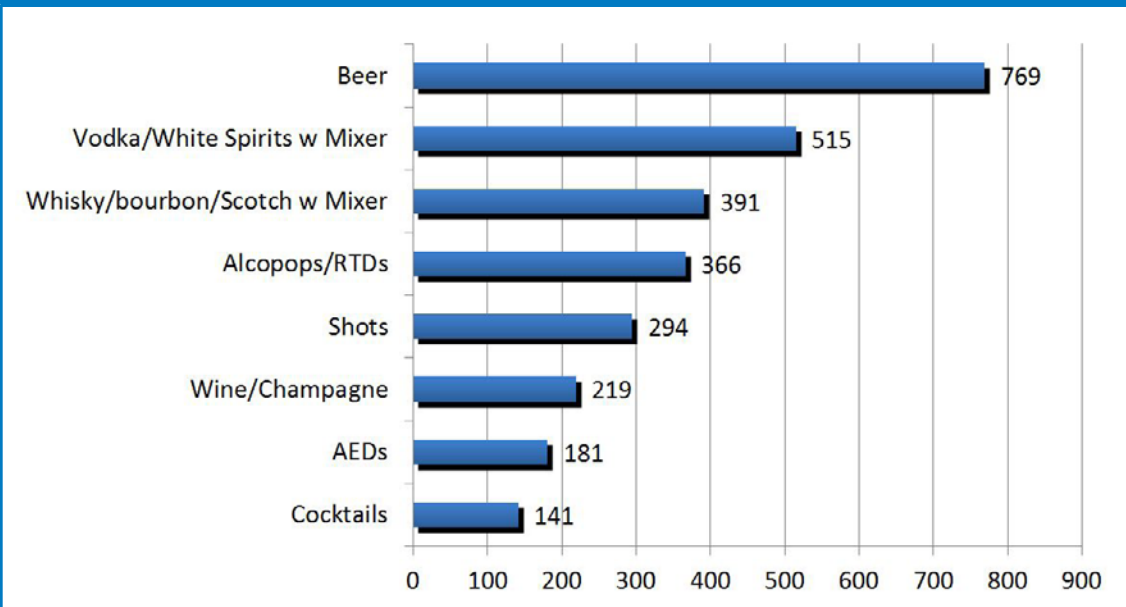
Table 32 Venue classification vs. patron intoxication indicators per hour

Descriptor	Large mainstream pub	Bar	Nightclub
Mean percentage of patrons showing any intoxication (%)			
10–11 pm	42.20	31.71	22.30
11pm–12 am	52.62	52.09	42.14
12–1 am	59.49	61.11	55.71
1–2 am	72.13	63.72	70.99
2–3 am	75.30	71.08	74.88
Mean percentage of patrons too intoxicated to remain in the venue (%)			
10–11 pm	1.91	1.23	1.23
11–12 am	4.46	4.00	2
12–1 am	9.97	5.70	6.31
1–2 am	8.96	6.96	11.46
2–3 am	25	10.34	16.18
Mean percentage of patrons showing signs of illicit drug use (%)			
10–11 pm	1.32	0.60	2.11
11–12 am	1.21	0.42	3.03
12–1 am	3.16	2.53	8.34
1–2 am	1	1.39	11.09
2–3 am	5	6.26	21.58

Figure 30 Distribution of venue responses to intoxicated patron's ordering drinks

Alcohol Use Behaviours and Promotion

Figure 31 displays frequency data for observed hourly ratings of the popularity of different types of drinks. Patrons most frequently rated beer as a popular drink.

Figure 31 Frequency of drink type observed as popular choice

Observers were instructed to note any drinks promotion or advertising in the venue. They noted advertised drink discounts on $n=98$ hourly occasions (10.9% of all observations). They also noted five occurrences of 'happy hour' style promotions, and 12 instances of a meal deal with free drink/s included.

A 4x2 chi square analysis indicates that venue patrons were not significantly more likely to demonstrate moderate or high levels of intoxication if drink discounts were available. χ^2 (3, n=872) = 6.574, p= 0.160. However, as shown in Table 33 (below), drink discounts were generally more common during observations when slight, moderate and high levels of intoxication were reported. The direction of increase is not directly related to intoxication level. Drink discounts were most common when moderate signs of intoxication were evident (13.5% of records) compared with no recorded signs of intoxication (4.6% of records).

Table 33 Distribution of patron intoxication across availability of drink discounts (n= 898)

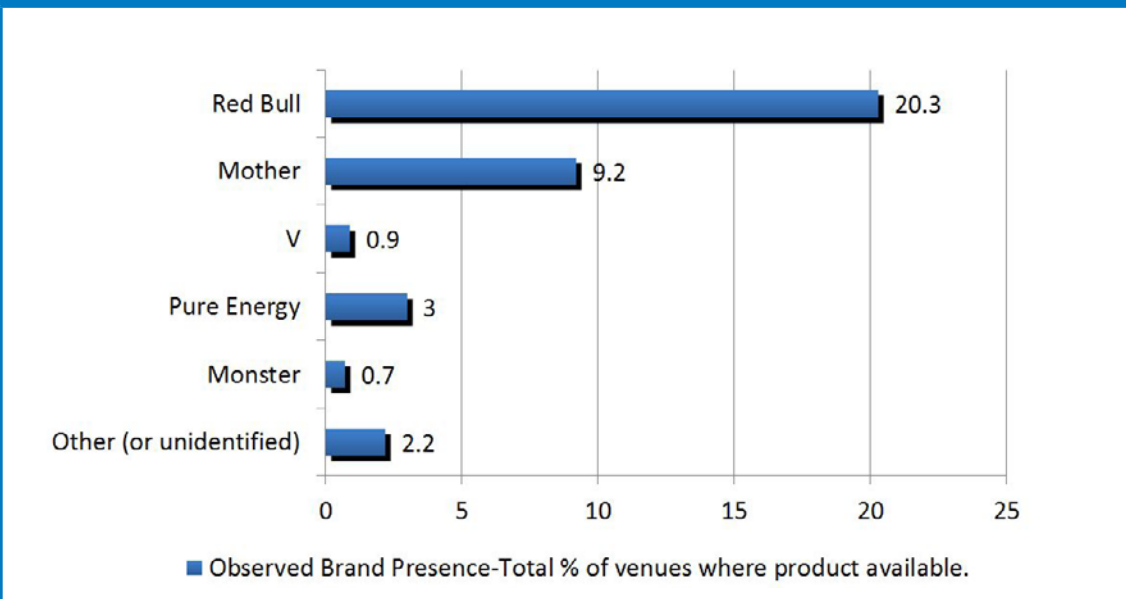
Patron intoxication rating (%)	Drink discounts promoted? (%)	
	No 89.10 (n=800)	Yes 10.90 (n=98)
Overall, no sign of intoxication	95.40	4.60
Slight signs of intoxication	90.10	9.90
Moderate signs of intoxication	86.50	13.50
High levels of intoxication	91.60	8.40

There were few observations of other promotional styles, although occasional brand-specific promotions provided gifts and prizes with purchase of branded drinks. Text notes from observers provide examples of such promotions and drink discounts observed:

- 4 Jäger bombs for \$30
- Jim Beam promotion. Chance of prizes if you buy Jim Beam cans: major prize is a fridge. There is about 20 promo people walking around giving out free lollies and glow sticks and telling people about the promotion
- Energy drink specials advertised at bar, red bull Jäger bombs and Red Bull vodka
- Free beach ball with Smirnoff purchase. Smirnoff promo staff working
- Smirnoff promotional raffle
- Promoted cheap drinks on a flatscreen: On tap beer/cider \$2.50 Jack Daniel bottles \$4.50 Double blacks \$5 Peach buzz \$2.50 Basics \$3 Coronas \$4 Breezers \$5 Jäger/all Shots \$5 Skittles drops \$2.

Alcohol and Energy Drink Use

Figure 32 shows the prevalence of (non-alcohol) energy drink brands observed throughout all licensed venues. Red Bull was the most common energy drink available, present in 20.3 percent of all observed venues—more than all other energy drink brands combined.

Figure 32 Observed brand presence—total percentage of venues where product available

Observers reported witnessing patrons consuming alcoholic energy drinks (AEDs) during n=254 hourly observations (28.3%). AEDs were reported as a popular/main drink of choice during 181 hourly observations (20.2%). Table 34 (n= 872) (below) shows levels of observed patron intoxication according to whether AEDs were witnessed as a common drink. A 4x2 chi square analysis indicates that venue patrons were significantly more likely to show moderate or high levels of intoxication if AEDs were recorded as being popular among patrons (χ^2 (3,872) = 28.036, p= 0.000).

Table 34 Distribution of patron intoxication across AED use popularity (n= 872)

Patron intoxication rating (%)	Popular AED use?	
	No (n=717)	Yes (n=181)
Overall, no sign of intoxication	92.3	7.7
Slight signs of intoxication	87.3	12.7
Moderate signs of intoxication	75.1	24.9
High levels of intoxication	72.7	27.3

Illicit Substance Use

Observers were asked to record suspected illicit substance use during each hourly observation record. In total, n=200 hourly records (22.2% of all observations) indicated some patron intoxication from illicit substances. As shown in Table 32, the proportion of patrons showing illicit substance intoxication increased over the course of the night, and was higher overall in nightclub type venues. However, it is worth noting the limitations of observational recording of illicit substance use, which relies on subjective interpretation of behavioural signs by observers and, therefore, carry inherent flaws and bias and can only be considered indicative.

Geelong, Melbourne and Sydney saw similar frequencies of suspected substance use, ranging from 28 percent to 31 percent. Wollongong and Perth saw relatively low frequencies of suspected illicit drug use, with Wollongong recording eight percent of total observations and Perth recording six percent. It is likely that low observed illicit drug use in Wollongong could be attributed to the lack of nightclub type venues observed. Generally a larger proportion of illicit drug use was observed in these types of venues. However, a similar proportion of nightclub venues were observed in Perth, Melbourne and Sydney, indicating that the reduced illicit substance consumption in Perth is due to other causes.

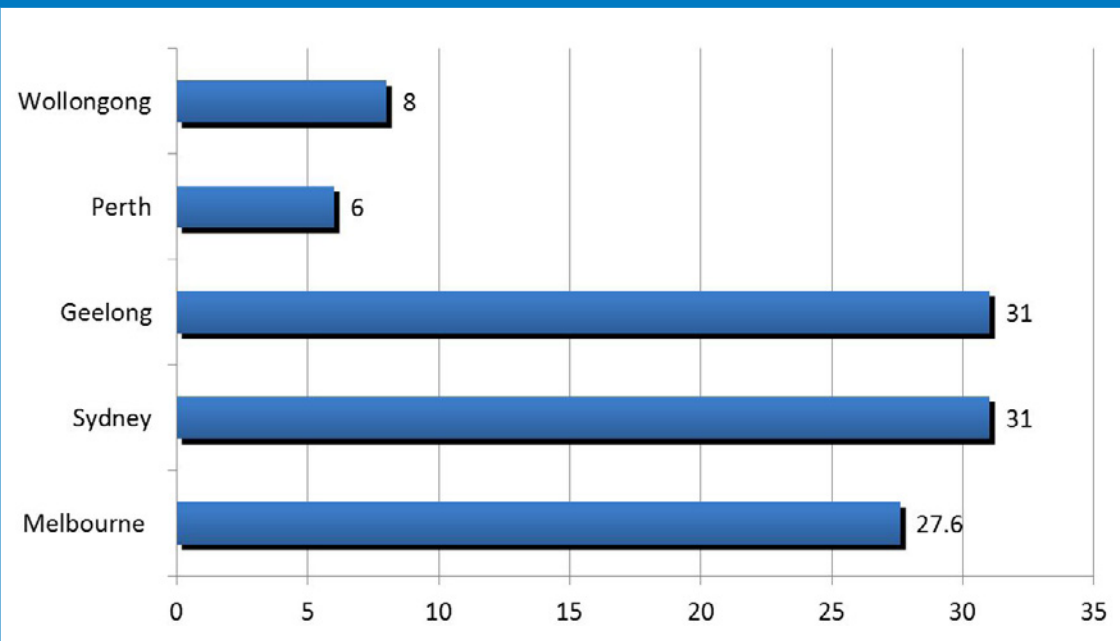
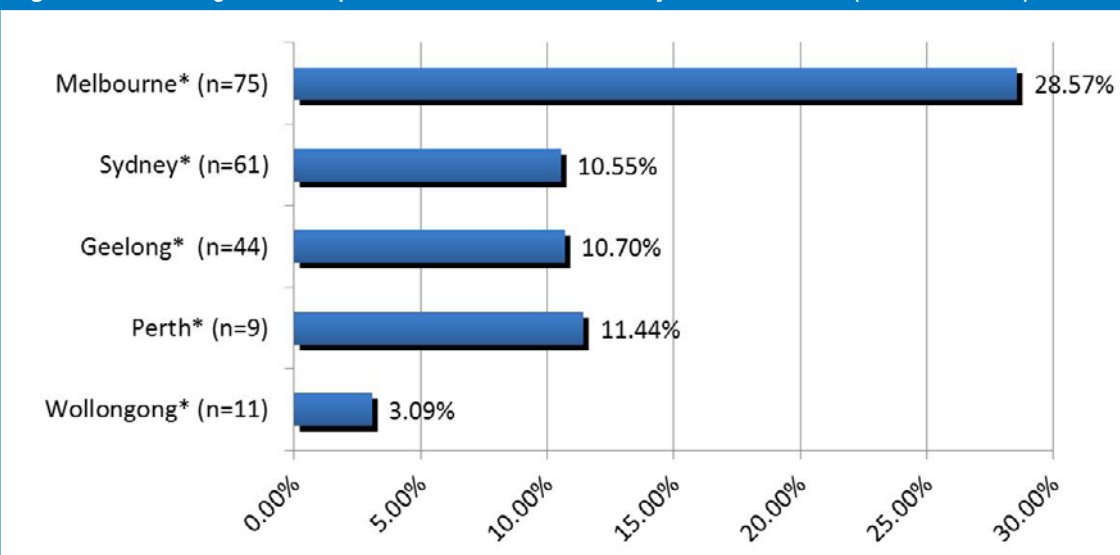
Figure 33 Percentage of hourly observations where illicit drug use was suspected

Figure 34 (below) shows the estimated proportion of venue patrons who were consuming illicit drugs during the observation when illicit drug use was suspected. While the overall frequency of suspected illicit drug use in Melbourne was similar to Geelong and Sydney, the proportion of patrons demonstrating illicit substance use in Melbourne was about three times higher (29%) when compared with Sydney (11%), Geelong (11%) and Perth (11%). The proportion of patrons suspected of illicit substances use in Wollongong was substantially lower (3%).

Figure 34 Percentage of venue patrons observed as affected by illicit substances (where observed)

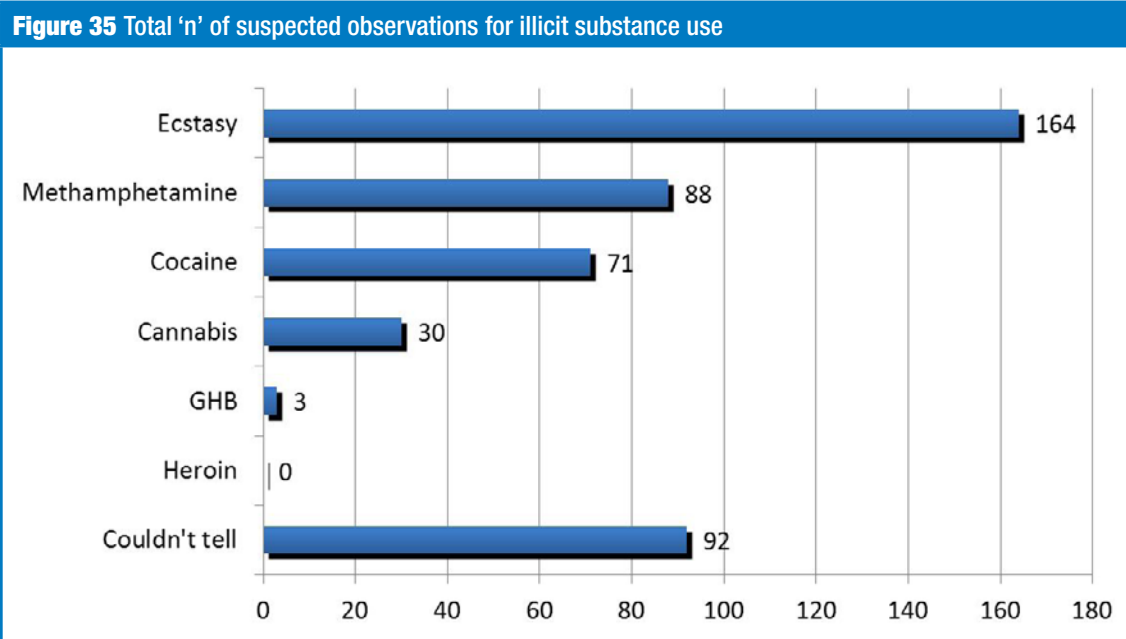
*n=number of observation where illicit substance use was suspected.

The most common reason for observers suspecting illicit drug use stemmed from patrons exhibiting intoxicated behaviour atypical of alcohol consumption (n=173). Other observations include visible ingestion/smoking of substances (n=27) exchange of money for small items (n=8), and visible paraphernalia associated with drug use, such as pipes, baggies etc (n=2).

Other text-based notes recorded additional indicators, such as:

- A few guys chewing gum hard and occasionally shuffling, one guy nodding off and when asked he said he was high up.
- Hyperactivity.
- The smell of cannabis being smoked.

Figure 35 (below) shows the frequency of specific illicit substance suspected of being used in observed venues. Stimulant drugs such as ecstasy, methamphetamine and cocaine were the most frequently suspected substances used in licensed venues, followed by cannabis and gamma hydroxybutyrate (GHB). On n=92 occasions observers also suspected illicit substance use was occurring, but due to the non-specific nature of the intoxicated behaviour the suspected substance was recorded as 'couldn't tell.'



Single observation records

To complement data gathered through hourly observations, researchers recorded information about particular consumption practices and behaviours, including energy drink use (alone and mixed with alcohol), visible signs of illicit drug use, and aggressive incidents. These data were captured qualitatively to contextualise findings gathered in the hourly observational checklist and provide more information about particular practices of interest. For occasions where AED use, illicit drug use or aggressive incidents were witnessed, researchers completed a short checklist and then described in more detail the behaviours of patrons and staff.

Energy drink consumption

During the study, 112 different groups of people were witnessed consuming energy drinks. Nineteen percent (n=21) of these were observed consuming energy drinks alone and 81 percent (n=91) were seen combining alcohol with energy drinks. Groups of energy drink users were most frequently observed in Sydney (51.8%), followed by Melbourne (27.7%), with much less energy drink use observed in other cities (see Table 35).

Table 35 Groups of energy drink consumers observed by site

	Geelong n (%)	Melbourne n (%)	Perth n (%)	Sydney n (%)	Wollongong n (%)
Groups of energy drink users	10 (8.9)	31 (27.7)	5 (4.5)	58 (51.8)	8 (7.1)

Groups of energy drink users varied between two and 15 people, with a mean of 3.6 people per group. These groups were much more likely to be observed in clubs (57.3%) and bars (34.5%), with very few observed in pubs (8.2%). The groups were observed most frequently between 11 pm to 2 am (see Table 36).

Table 36 Groups of energy drink consumers observed by time

	10–11 pm n (%)	11 pm–12 am n (%)	12–1 am n (%)	1–2 am n (%)	2–3 am n (%)
Groups of energy drink users	12 (10.7)	31 (27.7)	31 (27.7)	31 (27.7)	7 (6.3)

Groups of people who consumed energy drinks alone (n=21) were slightly more likely to be female (53.3%) and, based upon estimations of age by appearance, had a mean age of 22 years (range 18–30). Groups of people consuming alcohol with energy drinks (n=91) were more likely to be male (59.4%) and had a mean age of 25.5 years (range 18–40).

Groups of people who combined alcohol with energy drinks (n=91) were most often observed consuming 'Jäger bombs' or other types of bombs (ie energy drinks mixed with a different liqueur), followed by white spirits and brown spirits (see Table 37). No pre-mixed alcohol/energy drinks were identified. Twenty nine percent (n=26) of groups included at least one person who bought a 'chaser' (a different type of alcoholic drink) to consume after their AED.

Table 37 Types of alcohol combined with energy drinks

	Bombs	White spirits	Brown spirits	Beer
Groups of energy drink users	44 (48.4)	33 (36.3)	22 (24.2)	2 (2.2)

*Total equals more than 100 percent because 10 groups combined energy drinks with more than one type of alcohol.

To put this information into context, researchers engaged in informal (but still covert) conversations with AED consumers and made notes about their practices. Conversations with AED consumers revealed that primary motivations for use included taste and energy drinks' properties of wakefulness, but that too much alcohol and other depressant drugs such as cannabis could result in the stimulant properties of caffeine becoming ineffectual.

It was observed, and elicited from AED consumers, that some people combine up to eight AEDs per session of alcohol use. Researchers observed that 'bombs' in particular, were often consumed in quick succession; for example, straight after one another or two within fifteen minutes. Ordering a 'chaser' after a 'bomb' was also observed to be common. Sometimes energy drinks were used as the chaser following a shot of alcohol. It was also common for patrons to mix the types of alcohol they consumed with energy drinks; for example, some groups of people were observed consuming 'bombs', and then later in the evening were observed consuming energy drinks with white spirits.

Researchers described AED consumers as active and lively. The most common behaviour observed among those consuming AEDs was dancing. In particular, the words 'energetic', 'wild', 'hyperactive' and 'boisterous' were used to describe the dancing of AED consumers. Other behaviours noted included singing, hugging, 'rough-housing', shouting, giggling and fidgeting. Those consuming AEDs were reported to be highly intoxicated and were often observed attempting to 'pick up' patrons of the opposite sex.

Illicit Drug Use

Researchers recorded visible signs of illicit drug use among patrons by:

- witnessing the ingestion of drugs;
- witnessing the exchange of small items;
- observing drug paraphernalia; or
- detecting behavioural signs of drug use.

With the last point, this often involved an informed guess as to what drugs the patron had used based on training from senior members of the project team prior to fieldwork. As such, the data should be interpreted as informed 'guestimations' rather than fact.

Researchers observed 51 groups of illicit drug users during the study. An overwhelming majority of drug using groups were observed in Sydney (62.7%), followed by Melbourne (29.4%), with fewer groups observed in other cities. No groups of drug users were observed in Perth (see Table 38).

Table 38 Groups of drug users observed by site

	Geelong n (%)	Melbourne n (%)	Perth n (%)	Sydney n (%)	Wollongong n (%)
Groups of drug users	2 (3.9)	15 (29.4)	0	32 (62.7)	2 (3.9)

Groups of drug users varied between two and 10 people, with a mean of four people per group. Similarly with energy drink consumers, most drug use observed was in clubs (74.5%), followed by bars (21.6%) and pubs (3.9%). Groups of drug users were more likely to be observed between 11 pm and 1 am (see Table 39).

Table 39 Groups of drug users observed by time

	10–11 pm n (%)	11 pm–12 am n (%)	12–1am n (%)	1–2am n (%)	2–3am n (%)
Groups of drug users	3 (5.9)	12 (23.5)	22 (43.1)	9 (17.6)	5 (9.8)

Researchers most commonly observed that the drugs consumed among groups were stimulants—ecstasy, cocaine and methamphetamine (see Table 40). Groups of stimulant users (n=47) were more likely to be male (63%) and their mean age (based on estimations of age by appearance) was 23 years. Groups of cannabis users (n=4) were almost all male (93.75%) and their mean age was slightly older, at 24 years.

Table 40 Types of drugs consumed by groups

	Ecstasy n (%)	Cocaine n (%)	Methamphetamine n (%)	Cannabis n (%)
Groups of drug users	30(58.8)	21 (41.2)	16 (31.4)	4 (7.8)

*Total equals more than 100 percent because 20 groups were suspected of consuming more than one type of stimulant drug. Where researchers were unsure which type of stimulant was consumed they marked both down.

Most signs of drug use reported in the separate drug use form involved witnessing visible intoxication from something other than alcohol (n=37; 72.5%) and witnessing the ingestion of drugs (n=14; 27.5%). The drugs associated with obvious intoxication other than from alcohol were the stimulants— ecstasy, cocaine and methamphetamine. Commonly observed signs of drug use among stimulant users included: looking startled (eyes wide, dilated pupils), licking their lips, grinding their teeth and moving their jaw from side-to-side. Less commonly observed were vacant looks, bloodshot eyes and looking tense.

Where researchers observed the ingestion of drug use, this included witnessing cannabis smoking, witnessing or hearing groups of people snorting lines in the toilet and witnessing the ingestion of ecstasy pills.

Researchers took notes about the practices and behaviours of groups of drug users. As with energy drink consumers, the most common behaviour observed by groups of people suspected to be consuming the three stimulant drugs was dancing. Words to describe the dancing of drug users included 'energetic', 'vigorous', 'erratic', 'enthusiastic', 'strange', 'eccentric' and 'crazy'. Groups of stimulant users were generally described as being unable to relax or stand still. They were observed to be talking animatedly, particularly while smoking cigarettes (and inhaling deeply) and they displayed other signs of activity, including 'darting about', fidgeting and shuffling. Stimulant users were also observed being tactile, and engaged in behaviours such as hugging and cuddling. Groups of stimulant users were also observed making regular frequent visits to the bathroom.

Two groups of stimulant users were approached by security and asked to leave the venue during observations. One group of five males, estimated to be around 18 years of age, were suspected to be using cocaine and/or ecstasy. Over the space of three hours this group's behaviour progressed from dancing, to becoming hyperactive, to talking aggressively. At one point they were refused service at the bar and shortly afterwards three members of the group were ejected from the venue, with two permitted to stay. The second incident that resulted in immediate ejection involved two males who researchers and security staff observed consuming ecstasy on the dance floor.

Physical incidents

Over the course of the fieldwork period survey teams observed 14 separate aggressive physical incidents. This type of incident was considered distinct from sexual and verbal incidents, which were recorded separately. Teams observed five physical incidents in Perth, four in Sydney, two in both Melbourne and Geelong and one in Wollongong. Most physical incidents witnessed were in clubs ($n=7$; 50%), with four in pubs (28.5%) and three in bars (21.5%). Most aggressive physical incidents were observed between midnight and 1 am (see Table 41).

Table 41 Physical incidents observed by time

	11 pm–12 am n (%)	12–1 am n (%)	1–2 am n (%)
Physical incidents	2 (14.3)	9 (64.3)	3 (21.4)

Physical incidents involved a minimum of two patrons and a maximum of 11, with 4.3 being the mean. The average intoxication level of people involved in the incident as judged by fieldworkers was 7.8 out of 10 (range 6–10). One incident was suspected by researchers to involve patrons who appeared intoxicated from ecstasy and a further two incidents were suspected to involve patrons affected by drugs, but fieldworkers were unsure which drugs.

Overwhelmingly, the patrons most likely to be involved in aggressive incidents were males in their twenties. Only three incidents involved older age groups and one involved younger patrons. Around one third of altercations involved both women and men. Only one physical incident involved only females.

Most incidents happened in busy areas such as the dance floor, the bar and the venue entrance. Less commonly incidents were reported to occur in the toilets, outside or near stairs.

Men tended to get into physical altercations with strangers while women tended to get into altercations with people they knew. The main reasons for incidents involving male aggressors were intoxicated individuals accidentally bumping into others leading to a physical altercation, or intoxicated individuals fighting with security over being removed from the venue. Incidents with female aggressors generally involved women hitting men (who they appeared to know) and intra-group fighting with other women (who they appeared to know).

One incident involved a group of women 'attacking' a group of men and it was unclear how this started or how they knew each other. The altercation continued outside and police were called to attend.

All physical incidents were resolved by removing the offenders from the venue, with the exception of one incident, which was resolved by police intervention. It was noted in all incidents that security handled the incident efficiently and effectively.

Sexual Incidents

Researchers observed eight sexual incidents during the data collection period, six in Sydney and two in Geelong. Most occurred in bars (n=5), followed by pubs (n=2) and only one took place in a club. Sexual incidents reportedly occurred fairly evenly at different times of the night (see Table 42).

Table 42 Sexual incidents observed by time

	9–10 pm n (%)	10–11 pm n (%)	11 pm–12 am n (%)	12–1 am n (%)	1–2 am n (%)
Sexual incidents	1 (12.5)	2 (25)	3 (37.5)	0	2 (25)

The mean number of people involved in sexual incidents was 2.6, with a minimum of two and a maximum of five people. The mean intoxication level of patrons involved in sexual incidents, as judged by fieldworkers was 6.8 out of 10 (range 5–8). No drug use was suspected among patrons involved in any of the sexual incidents.

All sexual incidents involved a combination of men and women in their twenties, except two which involved women in their twenties and men in their late thirties or forties. All sexual incidents occurred near the bar or on the dance floor. All sexual incidents were either settled among patrons (n=2) or not settled (n=5).

Sexual incidents involved men pinching females on the bottom (n=2), men grabbing women forcefully on the dance floor and attempting to dance with them or grinding themselves against women on the dance floor (n=3), men making indecent gestures at women (n=1) and one female repeatedly asking a male indecent and unwanted questions.

Verbal Incidents

Fourteen verbal incidents were recorded over the fieldwork period; ten of these were observed in Sydney, two in Geelong and one each in Perth and Melbourne. Verbal incidents more often occurred in bars (n=7; 50%), followed by clubs (n=5; 35.7%) and pubs (n=2; 14.3%).

Most verbal incidents took place between 1 and 2 am, but were spread evenly across the night (see Table 43).

Table 43 Verbal incidents observed by time

	10–11 pm n (%)	11 pm–12 am n (%)	12–1 am n (%)	1–2 am n (%)	2–3 am n (%)
Sexual incidents	3 (21.4)	3 (21.4)	2 (14.3)	5 (35.7)	1 (7.1)

Verbal incidents involved groups of between two and 10 people and averaged 3.3 individuals. The average intoxication levels of those involved in verbal incidents, as perceived by fieldworkers was 7.4 out of 10 (range 5–9). One incident was suspected to involve patrons who had been consuming drugs, specifically methamphetamine.

Most incidents involved two males in their twenties. One incident was between two females and two incidents involved conflict between men and women. Incidents occurred mostly commonly at the venue entrance, the bar, the dance floor and other crowded indoor spaces. Security staff settled five incidents, three were settled among the aggressors, two were settled by intervention from other patrons and five were not settled.

Verbal incidents were most commonly caused by: accidentally bumping into each other while dancing, accidentally spilling drinks on another person, intoxicated patrons arguing with security for being escorted out of the venue, jealousy between males and females leading to an altercation, and soccer fans quarrelling.

Summary

To complement data gathered through hourly observations, researchers recorded information about particular consumption practices and behaviours, including energy drink use, visible signs of illicit drug use and aggressive incidents.

Fieldworkers observed strikingly similar patterns of energy drink and drug use. Groups of energy drink users and stimulant drug users were most frequently observed in Sydney and Melbourne; were much more likely to be observed in clubs, followed by bars; and were observed most frequently between 11 pm and 2 am. Groups of AED users and drug users were more likely to be male and in their early to mid twenties. The AED users frequently consumed 'bombs' and around a third bought a 'chaser' to follow. Fieldworkers described AED consumers and drug users as energetic in their interaction and dancing.

Only 36 physical, sexual or verbal incidents were witnessed from 898 hours of field observations, indicating that in-venue incidents are relatively rare. Most incidents were observed in Sydney, although five physical incidents were noted in Perth. Physical incidents were more likely to occur in clubs and pubs, with sexual and verbal incidents more likely to occur in bars. Most incidents occurred between midnight and 2 am and among people who appeared heavily intoxicated from alcohol. Physical and verbal incidents occurred mostly among males in their twenties and sexual incidents involved men and women in their twenties. Incidents were most likely to occur in busy areas such as the dance floor, the bar and the venue entrance. Strangers accidentally bumping into one another most commonly caused incidents involving males. Women were more likely to be involved in incidents with people they knew. It was generally noted that security handled incidents efficiently when they were needed to intervene.

Summary and Discussion of Trends

This study provides unprecedented insight into the nightlife of five Australian cities and the behaviour patterns of people in NEDs across Australia. The interview and observational data provide different insights into patron behaviour and both datasets are large enough to draw strong conclusions and note important trends. This is also one of the first studies to compare intoxication levels across different cities, allowing for greater insight into whether local regulatory environments and cultures play a role in the dynamics of these NEDs and their consequent experience of outcome variables such as intoxication, offending and harms. The following section focuses on the major aims of the study, namely: patron intoxication and offending and the role of a number of influences such as pre-drinking, energy drink use and illicit substance use.

Intoxication

The sample showed moderate levels of intoxication overall, but the data also indicated a linear increase in BAC levels throughout the night. Venue observations also indicated a consistently increasing level of intoxication. Midnight to 1 am was identified as the time when most patrons were ranked as moderately intoxicated or more. The overall median BAC at time of interview was 0.054 mg of alcohol per 100 mL of blood. This is somewhat lower than a prior study of four European cities (Hughes et al. 2011), which found rates between 0.05 (Slovenia) and 0.10 (United Kingdom) for females and 0.07 (Spain) and 0.13 (United Kingdom) for males. The study was conducted at similar hours to the current study, but hourly intoxication rates were not reported. The hourly BAC levels in this study are also lower than those found and modelled in a United Kingdom study of three cities (Bellis, et al., 2010) which found that mean BAC levels between 10 pm and midnight were around 0.09. They also use modelling to predict that BAC levels would be around 0.19 by 4 am, far exceeding the 0.10 observed in this study. In the most relevant previous comparison study, Rydon and colleagues (1993) found that 56 percent (n=172) of the sample gave readings of 0.05 or higher and that 36.8 percent met or exceeded 0.08 mg per 100 mL.

There was a good correlation between self-rated intoxication and BAC. Of interest, people who self-rated their intoxication at three out of 10 were, on average, almost at the legal drink BAC driving limit (0.05). People who self-rated their intoxication over five varied substantially between zero and 0.34 mg per 100 mL. This finding is important in terms of noting that people's ability to assess their own intoxication in relation to their BAC varies substantially. This suggests interventions that focus on reducing intoxication and/or drink-driving should make this high variability clear to the public. Acknowledging that number of drinks, BAC and self-rated intoxication can vary so much suggests that interventions, which inform people about the way their own body responds to alcohol, could be valuable when included in public awareness campaigns or through brochures and via one-on-one interventions with health professionals.

Overall, there was a significant positive correlation between BAC readings and the number of signs of intoxication participants presented. Further, the number of signs of intoxication correlated significantly with the number of hours participants reported 'going for' and self-reported number of standard drinks consumed prior to interview. Importantly, interviewees who research staff reported as showing signs of intoxication had a median BAC level of 0.067, just above the drink-driving level for Australia. This finding suggests that people begin exhibiting signs of intoxication before becoming heavily intoxicated, but after the legal driving limit.

Confirming anecdotal reports, consuming a greater number of alcohol types was associated with a higher BAC reading. On the other hand, there was no significant difference between the main types of alcohol consumed in venues (beer, champagne, dark spirits and wine) in relation to mean levels of intoxication. Prior studies have found that beer and spirit drinkers and people who consume beer, spirits and wine are not only heavier drinkers but probably more rebellious and deviant (Smart & Walsh 1995) although this was not explicitly linked to intoxication levels. A subsequent paper reports that BAC levels rise more quickly after

spirits are consumed; that beer creates less impairment than brandy at the same dose levels; that brandy also leads to more emotional and aggressive responses; and that those who drink beer or beer and spirits have more alcohol-related problems than others (Smart & Walsh 1995). In their study of intoxication in four European cities, Hughes and colleagues (2011) found that high BAC was associated with having consumed spirits in England only. While the research data to date suggests the effect of beverage type on intoxication varies across countries and warrants further investigation, it may also be that the difference is due to variations in methodology between studies, variations in the availability and price of different types of alcohol between countries, and changes over time.

Site differences

Self-reported intoxication and BAC readings differed significantly at various interview sites. Geelong had the highest median BAC (0.067), closely followed by Perth and Wollongong (0.066) and then Melbourne (0.048) and Sydney (0.033). However, as shown in Figure 8, BAC levels throughout the night show very different trends at various times, with Melbourne and Perth showing peaks of 0.11 at 4 am. While not representative of all of Melbourne's entertainment areas, the data show that the regional cities have higher mean intoxication levels, but capital cities tend to have the highest levels late at night. On the other hand, Table 6 shows that Sydney and Melbourne had the highest proportion of people who had BACs of zero, whereas people in Wollongong and Geelong showed the highest proportion of heavily intoxicated (>0.10) people. The wide variability of these findings suggests different drinking cultures in the different cities. Further analysis of the data might better explain these findings but is beyond the scope of this report.

As outlined in the introduction, sites differ substantially in terms of their demographics, cultural make-up, the licensing regimes and their levels of enforcement, and the outlet density and liquor availability in each city. Of interest, Sydney, Perth and Wollongong all show a peak BAC level earlier in the evening that reflects Friday night trade. It would be expected to see this in Melbourne as well and it may be that Friday night drinking patterns in Melbourne stretch longer into the evening, although Melbourne's mean BAC levels appear lower than those of other cities early in the evening. The very late night increases reported in Melbourne can also be contributed to a partial sampling bias as interview teams were located near Crown Casino and many heavily intoxicated people moved from nightclubs and pubs to this late night entertainment attraction.

As reported earlier, the main earlier study to compare cities was conducted by Hughes et al. (2011) in the European Union. Although the number of patrons interviewed in each city was substantially smaller than the current study, Hughes and colleagues had the advantage of comparing very different drinking cultures and subsequently finding significant differences. The findings of this study show that the Australian cities studied generally have lower mean levels of intoxication than the four cities in the union investigated by Hughes et al. In particular, the mean intoxication levels in this study (0.033–0.067) were up to half the levels recorded in the United Kingdom (0.10 for females and 0.13 for males). However, it was also clear that hourly data showed different trends to those in the European cities and that by midnight, most Australian cities were also experiencing higher levels of intoxication (eg 0.08) but still much less than the United Kingdom.

Overall, the data suggest that the licensing and enforcement regimes in each of the states studied result in increasing levels of intoxication throughout the night, although there are some local variations, most notably the lack of a substantial night-time culture in Wollongong. While the trading hours are earlier in Wollongong, the patterns of intoxication are very similar to those of other cities. They do occur earlier in the evening suggesting that earlier trading hours may shift drinking cultures to the evening rather than late-night/early morning economy. While there were lower rates of assault in Wollongong compared with the other sites, none of the other harm or crime measures showed any difference.

Pre-drinking

'Pre-drinking' (otherwise referred to as 'pre-gaming' or 'pre-loading') involves planned drinking, usually at someone's home, prior to going to a social event, typically a bar or nightclub, although previous research has also addressed tertiary student populations and activities (DeJong, 2010). Pre-drinking has been identified as one of the major impediments to responsible service of alcohol, and a major predictor of subsequent intoxication and an increased likelihood of experiencing violence (Hughes 2007; Pedersen & LaBrie 2007). Although it sometimes occurs in preparation for events where alcohol is not available, especially by underage drinkers (Pedersen & LaBrie 2007), pre-drinking has particular relevance to policies influencing licensed premises (Wells et al. 2009).

Drinking before entering licensed venues is not a new behaviour, but it appears to have become an increasingly popular and typical activity among young adults in western countries worldwide (Borsari et al. 2007; Forsyth 2006; Hammersley & Ditto, 2005; Pedersen & LaBrie, 2007; Wells et al. 2009). Previous studies have found that pre-loading and drinking games appear to be distinct activities from simply drinking before going to a licensed venue (Borsari et al. 2007) and that they predict greater harm than consuming the same amount of alcohol in venues earlier in the evening. Organised pre-drinking is distinctive in that higher levels of intoxication are often the result. This is because a greater total amount of alcohol is consumed over the course of an evening. Wells et al. (2009) point out that pre-drinking is depicted, celebrated and even glorified in numerous internet bulletins and blogs, YouTube videos and Facebook entries of young adults. Pre-drinking has been associated with increased risk of intoxication, violence and unwanted sexual encounters (Borsari, et al., 2007; Hammersley & Ditton, 2005; Hughes, 2007; Wells, et al., 2009).

Almost two-thirds of the overall sample (65%) reported pre-drinking when interviewed during their current night out. This figure is consistent with previous international research, indicating that pre-drinking is undertaken by most people across different night-time entertainment districts (DeJong, 2010; Hughes, 2007; Miller, et al., under review; Miller, et al., 2012).

Participants of the full-length interview who reported consuming alcohol before attending licensed venues or 'going out' were asked to nominate locations where this had happened. Those who answered this question (N=2,297) most commonly reported pre-drinking in private homes (82%). Smaller proportions reported pre-drinking at private functions (5%), in cars (4%) and at work (1%). 'Other' locations (2%) included: university (n=9), on a train (n=8), and at a sports club/event (n=5). This supports previous research which found that most pre-drinking is a planned activity that occurs mainly in private residences (DeJong 2010).

Male participants were significantly more likely to report pre-drinking than female participants, and to have consumed more alcohol when doing so. Interestingly, this contradicts previous findings from DeJong et al. (2010) who found that males and females were equally likely to engage in pre-drinking. However, their sample of American college students was less heterogeneous and representative.

Overall, participants who reported pre-drinking before attending licensed venues/'going out' were more likely to take part in heavy alcohol consumption patterns and risky behaviour. Specifically, they were more likely to report consuming more standard drinks pre-interview and subsequently to record a higher BAC reading. Patrons who reported pre-drinking also experienced more aggression and harm. They reported that in the past three months they had experienced higher rates of involvement in any aggressive behaviours, incurred alcohol-related injuries/accidents, engaged in property crime while alcohol-intoxicated, and drove under the influence of alcohol.

Pre-drinkers were more likely to exhibit additional consumption behaviours that have been linked to alcohol-related harm. They were more likely to report consuming energy drinks and mixing energy drinks with alcohol, and to report consuming illicit drugs before the interview.

Participants in Geelong and Perth were significantly more likely to report pre-drinking. This is an interesting finding that cannot easily be accounted for by previously associated predictors of pre-drinking such as trading hour restrictions, late night lockouts or other alcohol harm interventions. The prevalence of pre-drinking in Geelong/Perth is 81/80 percent respectively compared with between 52 and 60 percent at other sites, and

at higher consumption rates (median six drinks, compared with four and five at other sites). Results from several other studies investigating pre-drinking have indicated that time of night can have a mediating effect on pre-drinking amount, in that participants surveyed later at night were more likely to pre-drink than those surveyed earlier in the evening (Miller, et al., 2011; Reed, et al., 2011). In some examples, restrictions of trading hours have been associated and shown to be effective with positive outcomes for pre-drinking rates throughout the night (Miller & Droste under review).

Younger participants were significantly more likely to report pre-drinking. However, there was no significant correlation between number of pre-drinks consumed and age, indicating that motivators for pre-drinking may be more salient for younger patrons. Seventy-seven percent of patrons aged 18–19 reported pre-drinking, this dropped to 57 percent for those aged 25–29 and 44 percent for those aged 40+.

The most commonly reported motivation for pre-drinking, price (61.1% of pre-drinkers) is likely to be the most important to younger participants. This is not the first study to identify price discrepancies between packaged liquor and alcohol bought in venues as a key motivator for pre-drinking behaviour (DeJong 2010; Miller & Droste under review; Reed et al. 2011; Wells et al. 2009). While the findings also show that social and convenience factors played a role in patron motivations for pre-drinking, it is clear that the difference in price between packaged liquor and alcohol bought in venues was by far the most common reason for pre-loading. This supports previous qualitative findings from research around the world (Forsyth 2006, 2010; Wells et al. 2009).

Previous research, such as DeJong et al. (2010) which has focussed primarily on student and fraternity demographics, may have heightened the perceived importance of social bonding as motivation for pre-drinking behaviour. Interestingly, social motivators such as 'for fun' and 'chance to catch up with friends' accounted for 22.4 percent of motivation to pre-drink, indicating that price disparities are a more salient issue for the two thirds of venue patrons who decide to pre-drink.

Similarly, previous research has attributed pre-drinking in part to patrons' desires to become intoxicated before entering licensed venues as a method of alleviating social anxiety, or easing social interactions with prospective partners (DeJong 2010). However, only 7.3 percent of the population nominated the desire to become intoxicated before entering licensed venues as their primary motivation for pre-drinking, indicating that among a general population sample this may be of less concern.

Venue patrons are not the only stakeholders to identify price discrepancies as a key motivator for risky pre-drinking behaviour. Key informant research conducted with prominent night-time economy stakeholders from the Dealing with alcohol-related harm and the night-time economy (DANTE) study has also reached this conclusion (Miller, et al., 2012). The vast majority of key informants identified pre-drinking as a major issue facing the NTE, both in terms of economic viability and social and health related harms to the community. One of the main themes to arise around pre-drinking was that it was primarily caused by a very substantial disparity between the price of alcohol in venues and in packaged liquor stores. Licensee key informants repeatedly referred to the substantial differential between the costs they incurred managing intoxication as a cost related to providing alcohol. They compared this with packaged liquor outlets that, while obviously contributing to alcohol-related harm, paid for none of the associated costs.

The apparent implications of pre-drinking are amplified by the finding that participants who had pre-drunk were significantly more likely to have also consumed illicit substances, compounding intoxication symptoms and supporting the contention of Wells et al. (2009). As a result, patrons are entering and leaving NEDs in increasingly intoxicated states. This behaviour has repercussions for safe transport and navigation of impaired patrons to and from licensed premises.

Commentators have noted that the high level of alcohol consumed outside licensed venues should be of concern regardless of whether it precedes attending a hotel or nightclub. This is due to the inherent motivation of 'pre-gaming' drinkers to achieve harmful levels of drunkenness (Room & Livingston 2009). However, this study indicates that licensed venues are currently having to manage the harm from significant high-risk alcohol intoxication, for which they are seeing an inequitable share of alcohol sales and profit, to the supposed benefit of off-premises liquor outlets.

In sum, most NTE patrons pre-drink to intoxication. This is extremely difficult for venues to police, despite it being in their interest and allocated duty of care. Most pre-drinkers are motivated by price discrepancies between packaged and on-premises alcohol. Those who are pre-drinking may seldom come into contact with bar staff, or be ordering water when they do, meaning that their levels of intoxication can be difficult to monitor through regular staff interactions. Proposals to breathalyse patrons while entering venues would only represent another challenge to those already seeking to buck the system and could be easily circumvented by traditional practises of rapid consumption prior to entry or could further encourage side-loading (eg drinking from concealed containers brought into the venue) while in the venue. In addition, refusing entry to highly intoxicated patrons may remove harm from specific venues, but will do little to reduce the prevalence of overall violence in NTEs given that most alcohol-related assaults occur outside venues. Developing reliable alternative intoxication screening processes may help venue staff and security to identify and monitor at-risk patrons.

Energy drinks

A recent and emerging consumption practice in the night-time economy is to combine alcohol with energy drinks (AEDs). These AEDs are currently the subject of considerable media attention in Australia and internationally, with some countries moving to impose stricter regulations on their sale and supply. However, in Australia, research on AEDs is scarce, limiting meaningful public health discussions about the issue.

Only one other study has explored the popularity of AED use in the night-time economy and this study was based in the United States. Thombs et al. (2010a) conducted interviews and breathalyser tests with 697 patrons as they exited licensed venues between 10 pm and 3 am. They found that 13 percent of patrons had consumed an AED in the previous 12 hours. They also found that patrons who had consumed AEDs were more than three times more likely to leave the bar with a BAC of 0.08 percent or more, compared with non-AED consumers. The AED consumers were also more likely to leave the venue later in the evening, drink for a longer period of time and consume more drinks compared with non-AED consumers.

Research for the POINTED study showed that AED consumption in Australia's night-time economy is similar to that found by Thombs et al. (2010a) in the US, with almost one-quarter (23%) of all participants having consumed an energy drink and 14.6 percent having consumed an AED. However, of interest in Australia is that by 4 am this rate had doubled, and about one third of the sample had consumed an AED. Both males and females were equally likely to consume energy drinks alone and combined with alcohol. Younger participants, particularly those aged 18 or 19, were significantly more likely to consume energy drinks, AEDs and higher amounts of energy drinks. This is similar to North American research which shows that AED consumers are more likely to be younger, but is different in that some North American research indicates that AED consumers are more likely to be male (Berger et al. 2011; Brache & Stockwell 2011; O'Brien et al. 2008b). Participants who drank energy drinks with alcohol, self-reported consuming a mean of 2.5 energy drinks while those who did not mix alcohol with energy drinks self-reported consuming a mean of 1.6 energy drinks. This is broadly consistent with Australian data ascertained in a Tasmanian convenience sample (Peacock in press) and ecstasy users interviewed as part of the EDRS (Sindich & Burns 2010) which found that AED consumers report 2.4 and three energy drinks per session respectively. The maximum recommended daily intake of energy drinks per day is two standard energy drinks (typically containing 80mg of caffeine), and it appears as though most consumers in the night-time economy exceed this limit. However, it should be noted that one quarter of participants who reported energy drink consumption (25%; n=375) consumed between three and 15 energy drinks. Interventions targeted at reducing alcohol and energy drink use should be directed towards this smaller group of consumers.

Participants who consumed alcohol with energy drinks were more likely to report riskier drinking practices. They self-reported consuming significantly more alcohol than those who consumed alcohol alone, were significantly more likely to record a higher BAC reading, and to report pre-drinking and illicit drug use. These findings are consistent with some Australian and Canadian research (Brache & Stockwell 2011; Peacock in press; Price et al. 2010). Importantly, there was a strong correlation between number of energy drinks consumed and BAC reading, with participants who reported consuming more energy drinks generally recording higher BAC readings, similar to the findings reported in the United States by Thombs et al. (2010a).

The median number of energy drinks ($n=3$) consumed peaked at around 3 am across the whole sample, but differed across cities. In Melbourne, the number of energy drinks consumed increased steadily over the evening, while in Sydney energy drink use peaked at 3 am. In Wollongong it peaked at venue closing time (1 am) and in Geelong and Perth at 2 am. In Perth, legislation was introduced through a condition placed by the Director of Liquor and Gaming to prohibit the sale of alcohol mixed with energy drinks at specific venues, new venues and any venues that traded beyond their normal hours. However, patrons could still buy energy drinks on their own along with a shot of alcohol. Regardless, the data suggest there is no difference between Perth and other sites and that more stringent measures may be required. Further, given that on average, people have already exceeded the recommended daily intake by midnight, it could be argued that restrictions would be more effective if they were put in place around 10 pm.

Survey and qualitative research conducted internationally and in Australia indicate that AED users consume these drinks for four main benefits:

- wakefulness and energy;
- taste;
- to reduce feelings of drowsy inebriation; and
- to accelerate intoxication (Brache et al. 2012; Ferreira et al. 2004; O'Brien et al. 2008b; Peacock in press; Pennay & Lubman 2011, 2012).

Participants in this study were asked to report their main motivation for combining energy drinks and alcohol and their responses were broadly consistent. The most commonly reported reasons were taste (32%) and wakefulness and energy (24%). A smaller number of people reported that they enjoyed the feeling/buzz (8%), or consumed AEDs because the combination increased/boosted alcohol intoxication (7%).

Participants who reported consuming energy drinks were significantly more likely to report having experienced verbal and physical aggression in the past three months than those who had not, and were more likely to report having experienced an alcohol-related accident in the previous three months. People who had consumed energy drinks on the night of interview were also more likely to report having been refused entry in the past three months than those who had not. Finally, people who had consumed energy drinks on the night of interview were more likely to report having driven after drinking, or having committed property crime while intoxicated in the past three months, than those who had not consumed energy drinks. None of these findings denote a causal effect, but they suggest a potential relationship between energy drink use and antisocial behaviour that needs to be explored further. These findings are consistent with some North American research which found that AED users are more likely to engage in a range of risk-taking behaviours such as drink-driving, riding in the car with a driver who had been drinking and being hurt or injured, than non-AED users (Brache & Stockwell 2011; O'Brien et al. 2008b). However, it is unclear from both the current and previous studies as to whether this is because people who are risk-takers are attracted to AED consumption and/or whether AED consumption causes increases in risk-taking behaviour. Further research is required to explore this relationship, targeting within subjects designs in order to clarify the direction of the relationship between AED use and increased alcohol consumption and harm. However, it is worth stating that regardless of the direction of that relationship, participants who use AEDs are a higher risk group of participants regardless and interventions which limit consumption are justified.

The observational component of the research found that Red Bull was the brand most commonly sold. Where alcohol promotions were identified, these often involved discounted AED promotions. Observers reported witnessing AED consumption in at least a quarter of hourly observations and reported high levels of AED consumption in at least one fifth of hourly observations. Patrons were significantly more likely to be observed displaying moderate or high levels of intoxication in venues where AEDs were recorded as being consumed frequently.

More than 100 different groups of people were witnessed consuming energy drinks during the study period, with more than 90 groups witnessed consuming AEDs. Groups of AED users had a mean of 3.6 people per group and were much more likely to be observed in clubs and bars during 11 pm to 2 am. Groups of people consuming AEDs were more likely to be male and had a mean age of 25 years. Groups of AED users were

most often observed consuming 'Jäger bombs' or other types of bombs (ie energy drinks mixed with a different liqueur), as well as white spirits such as vodka. Researchers observed that 'bombs' in particular, were often consumed in quick succession. Ordering a 'chaser' after a 'bomb' was also observed to be common as was mixing the types of alcohol consumed with energy drinks. The AED consumers were described as energetic and highly intoxicated.

In summary, this is the first Australian study to investigate the prevalence of energy drink and AED use in the night-time economy and only the second international study to do so. Consistent with limited international research, around 15 percent of night-time revellers consumed AEDs, and they were more likely to be younger patrons. Consumers of AEDs were more likely to have a higher BAC reading, were more likely to pre-drink and use illicit drugs, and were more likely to have engaged in risky behaviour in the past three months, including being involved in a fight or drink-driving. However, the direction of the relationship between BAC, risky behaviour and energy drinks is still unclear, as it may be that people more likely to drink heavily and engage in risky behaviour are more likely to consume energy drinks, rather than energy drinks causing these behaviours. More research needs to be undertaken to disentangle this relationship.

Illicit drugs

Around one in six participants (n=1072, 16%) reported consuming illicit drugs (or non-prescribed pharmaceutical drugs), during their current night out (prior to interview) and 7 percent reported planning to use at least one drug type during the remainder of the night. The prevalence of self-reported illicit drug use in this study was consistent with another Melbourne-based survey of nightclub attendees conducted in 2004 (Degenhardt et al. 2004), but higher than that observed in a recent study of nightclub patrons conducted in two regional Australian cities which reported a prevalence of seven percent (Miller, et al., 2012).

Participants reported most-commonly consuming cannabis and psychostimulant drugs (ie ecstasy, methamphetamine and cocaine), with males more likely to report having engaged in illicit drug use than females. These findings are consistent with the literature, which has found psychostimulants to be the most widely used illicit drugs within licensed leisure spaces in Australia, with recent use being most common among 20 to 29 year old men (Australian Institute of Health and Welfare, 2011b; Sindich & Burns, 2010).

In Melbourne and Geelong 503 participants were invited to be tested for the use of methamphetamine, cocaine, opiates, cannabis and benzodiazepines, via drug swab (using the same technology employed by police in roadside tests). Most respondents (n=401, 80%) agreed to the test. To guarantee valid results, interviewers were trained in the strict protocol for handling drug swabs.

Interestingly, only half (n=44, 50%) of those participants who reported consuming methamphetamine, cocaine, opiates, cannabis and/or benzodiazepines earlier in the night returned a positive drug swab result for any of these substances. For example, 52 percent of participants who reported using methamphetamine returned a positive drug swab, 26 percent of those who reported using cocaine returned a positive result, and only 16 percent of those who reported using cannabis returned a positive drug swab result. The discrepancy between self-reported drug use and drug swab results (which test for the presence or absence of a drug) may be the result of a range of factors, including low drug purity or small doses of drug not being detected by the swabs, people consuming different drugs to those they believed they had consumed, or faulty swabs. While the drug swabs have been found to be reliable in laboratory settings when used as directed, and have been validated for use in roadside testing (Chu et al. 2012), a second swab type (in a minority of cases) was used when self-report and results from the main swab used (Pathtech DW6S) differed. This process also failed to reach conclusive results, confirming self-report in some instances and swab results in others. On review of the different findings, it is likely that slightly more than 20 percent of the people attending NEDs in Australia had used some form of illicit drug, with an extreme figure of 40 percent.

As well as examining self-reported and objective measures of illicit drug use by patrons, field observers were asked to record suspected illicit drug use during each hourly observation record. One-fifth of all observations indicated some patron intoxication from illicit substances, with the proportion of patrons showing illicit substance intoxication increasing over the course of the night, and being higher overall in nightclub type venues.

Consistent with findings from the patron interviews, stimulant drugs such as ecstasy, methamphetamine and cocaine were the most frequently suspected substances used in licensed venues, followed by cannabis and GHB. Observers also reported that stimulant users were more likely to be male. The most common reason for observers suspecting illicit drug use in licensed venues stemmed from patrons exhibiting intoxicated behaviour atypical of alcohol consumption, with users' behaviours described as energetic, erratic, enthusiastic, strange, animated and crazy.

The study also investigated the role that illicit drug use plays in intoxication, offending, risk and harm in the night-time economy. While only a minority of participants reported that illicit drugs had been consumed the last time they had been involved in aggressive behaviour, associations were found between self-reported use of illicit drugs on the night of interview and reported aggressive and offending behaviour in the three months prior to interview. People who reported illicit drug use on the night of interview were significantly more likely to report having engaged in physical, verbal and sexual aggression, as well as property crime and drink-driving. Self-reported illicit drug use was also associated with experiencing an injury related to intoxication during that time.

While causal relationships cannot be ascertained, another recent Australian event-based analysis showed that almost one in five young psychostimulant users (19%) reported engaging in an argument or fight during their most recent session of use (typically with a peer from their close social network), around one in six participants (16%) had an accident of some sort (related to intoxication) or injured themselves, and almost one in three (29%) reported regretting decisions that they had made during the course of the session (Jenkinson et al. 2009). As such, illicit drug use places significant demand on emergency services personnel, law enforcement and venue operators.

Conclusions

Alcohol remains the driver of most harm in the NTE, and while such harm is not very common, most people experience it in some form eventually. Striking similarities emerged across the five sites and most of the variables of interest. Levels of intoxication, energy drink use and mixed alcohol/energy drink use increased linearly throughout the night. These findings reinforce the very large body of research that shows a relationship between later trading and greater levels of intoxication and harm (Babor, et al. 2010; Chikritzhs & Stockwell, 2002; Miller, et al. 2012).

Intoxication resulting from pre-drinking is consistently the strongest predictor of trouble for individuals in our sample. Alarmingly most patrons attending the NTE exhibit this behaviour. Those who are pre-drinking may seldom come into contact with bar staff, or will order water when they do, meaning that their levels of intoxication can be difficult to monitor through regular staff interactions. Calls for improved intoxication screening practices are valid, but while refusing entry to highly intoxicated patrons may remove harm from specific venues, it will do little to reduce the prevalence of overall violence in NTEs given that most alcohol-related assaults occur outside venues. Most pre-drinkers are motivated by price discrepancies between packaged and on-premises alcohol, therefore pre-drinking behaviour represents a unique policy challenge for those seeking to reduce alcohol-related harm.

The use of energy drink and AED in the night-time economy was also found to be associated with an increased risk of harm. Consistent with limited international research, around 15 percent of night-time revellers consumed AEDs, and they were more likely to be younger patrons. AED consumers were more likely to have a higher BAC reading, to pre-drink and use illicit drugs, and to have engaged in risky behaviour in the past three months, including being involved in a fight or drink-driving. Importantly, rates of energy drink and AED use increased through the night to mean levels beyond the recommended intake for healthy consumption. This suggests the need for substantial action including research into the effects of such high levels of use, the effectiveness of labelling to warn against such use, the relevance of educational campaigns, and the need for legislative action.

Illicit drug use was common in the cities studied (with one in six people reporting drug use, which is likely to be an under-representation due to non-disclosure). It had a significant effect on intoxication, offending, risk and harm in the night-time economy. While only a minority of participants reported that illicit drugs had been consumed the last time they had been involved in aggressive behaviour, associations were found between self-reported use of illicit drugs on the night of interview and reported aggressive and offending behaviour in the three months prior to interview. People who reported illicit drug use on the night of interview were significantly more likely to report having engaged in physical, verbal and sexual aggression, as well as property crime and drink-driving. Self-reported illicit drug use was also associated with experiencing an injury related to intoxication during that time. Overall, the study shows that illicit drug use is a significant contributing factor to the harms observed in the night-time economy, but that only a minority of patrons use drugs. Despite this, it is clear that a program of research interventions and policy responses is needed to address the issue. Previous research has shown that a combination of supply, demand and harm reduction approaches is most likely to be effective.

To conclude, as the largest study conducted in the night-time economy to date, this research shows that alcohol remains a significant contributor to patron offending and intoxication in the night-time economy. Pre-drinking, energy drink use and illicit drug use all contribute significantly to the harm and offending behaviour observed, however basic levels of intoxication and pre-drinking remain the major predictors of offending and harm.

Key Findings and Directions for policy, practice and research

Key findings from this report are presented below with possible directions for policy, practice or research suggested for consideration.

FINDING 1: This research shows that levels of intoxication increased throughout the night across the five sites, resulting in a substantial proportion of the people in the NTE being heavily intoxicated, especially after 1 am when 30 percent of those interviewed across the country were above 0.1 BAC.

Proposal 1a: Current regulatory and enforcement frameworks require further refinement and investment. In particular, responsible service of alcohol (RSA) measures are evidently insufficient and require more stringent regulation and more comprehensive and systematic enforcement regimes.

Rationale: Police and other regulatory bodies need stronger legislative frameworks to allow them to act on venues that fail to implement RSA. A further need exists for systematic, publicly-available data about specific venues are failing to meet their licence conditions (Wiggers 2007).

Proposal 1b: Australian jurisdictions should consider imposing trading hour restrictions, applied consistently across regions to ensure businesses can compete on a level playing field.

Rationale: This research shows that levels of intoxication increased throughout the night across the five sites, resulting in a substantial proportion of the people in the NTE being heavily intoxicated, especially after 1 am (excluding Wollongong) when 30 percent of those interviewed across the country were above 0.1 BAC. Ultimately, the most evidence-based approach to reducing intoxication levels is through closing venues earlier across the board (Kypri, et al., 2011; Miller, et al., 2012).

Proposal 1c: An intervention trial prohibiting the sale of alcohol for 60 minutes before closing time is recommended in venues which trade after 2 am.

Proposal 1d: A program of research is recommended into the best models for regulating and monitoring licensing regulations. Consideration should be directed at an integrated strategy with a clearly-defined enforcement pyramid.

FINDING 2: This research identifies pre-drinking as a significant predictor of alcohol-related harm and a major impediment to responsible service of alcohol. This behaviour reflects Australia's culture of determined drunkenness and requires serious, substantial, evidence-based interventions across a range of variables (eg price, availability and advertising).

Proposal 2a: The most evidence-based measure to reduce alcohol consumption is to increase the price of alcohol through taxation (preferably based on volume and increasing according to beverage strength). This could also be ring-fenced to allow for specific expenditure on measures that ameliorate harm.

Proposal 2b: Regulatory measures should be implemented to reduce discount alcohol sales. In particular, bans on bulk-buys, two-for-one offers and other promotions based on price, deserve consideration as policy responses that could reduce heavy episodic drinking. Further, some states have regulations pertaining to discounting which should be more strictly enforced both on and off licensed venues.

Proposal 2c: State and local governments should investigate levies on each unit of alcohol sold by packaged liquor outlets to recover costs associated with alcohol. This money would be allocated for police, hospitals and councils to meet the costs of alcohol-related harm.

Rationale: The impact of pre-drinking documented in this study is substantially greater than reported in the previous study (Miller, et al., 2012). It suggests an even greater need for effective action. Current pricing regimes mean that packaged liquor outlets contribute to alcohol-related harm in society without making a

direct contribution to harm-reduction strategies. This is anti-competitive for licensed venues as businesses. It leaves local communities to address alcohol-related harm emanating from packaged liquor outlets, in particular cheap liquor promotions and sales. As has been identified in other fields of regulation, it is important that the 'polluter' contributes to the cost of harms arising from their activities. While this problem has been identified in other communities around the world, few have suggested measures to redress this situation. Levies on packaged liquor may be used to reduce the harm it causes by providing funds for increased regulatory and law enforcement, preventative initiatives or environmental measures. Levies would also have the additional benefit of changing consumption: research has consistently shown that even small price increases can reduce alcohol consumption (Stockwell et al. 2012; Wagenaar et al. 2009).

Proposal 2d: For every alcohol advertisement, a government-produced public health advertisement should immediately follow (funded via a levy on all sales by alcohol producers) informing the public of the harms associated with drinking, and addressing social norms around intoxication.

Rationale: This model has been used by French authorities. Concern about rising levels of childhood obesity, coupled with unease about the influence of United States' fast food and soft drink companies on consumption of food and beverages in France, led the French Government to take action on junk food advertising in 2004. It passed public health legislation under which advertisements on television or radio 'for beverages containing added sugar, salt or artificial sweeteners and for food products processed and sold in France must contain health information'. The information consists of four short messages. These are: 'For your health, eat at least five fruits and vegetables a day'; 'For your health, exercise regularly'; 'For your health, avoid eating too many foods that are high in fat, sugar or salt'; 'For your health, avoid snacking between meals'. On television and in cinemas these health messages are shown on a thin horizontal band (corresponding to 7% of the height of the screen), or as a screened notice displayed just after the advertisement. On radio, the message is broadcast immediately after the advertisement. Printed materials include a horizontal message strip also corresponding to 7 per cent of the total height of the advertisement. Companies that do not add public health warnings to all television advertisements are required to pay a government levy of 1.5 per cent of their advertising budget. Money from the levy goes directly to the French national institute for health prevention and education, the body that promotes healthy living (Jolly 2011).

FINDING 3: As a part of the pre-drinking culture, people were often observed by the research teams consuming alcohol near licensed venues just prior to entering.

Proposal 3a: A review of security training regarding identification of intoxicated people is recommended. A potential amendment could be training in field sobriety testing and the requirement for at least one staff member from each venue to have additional qualifications in this area. Such an intervention should be scientifically evaluated before being implemented.

Proposal 3b: Further research and intervention trials should be undertaken to identify methods to reduce levels of pre-drinking in night-time entertainment districts.

Avenues include:

- Police and councils should trial interventions to address drinking in cars and taxis, even when stationary. Council by-laws or state laws should be investigated.
- A potential alternative to further stretching police resources is to use specially hired and trained council officers to enforce such by-laws and they could also address the issue of open alcohol containers in many night-time entertainment districts.
- Systematic trials could also be conducted into the selective use of breathalysers by door staff in night-time entertainment districts to assess their utility and effectiveness.
- Heavier enforcement could be trialled, such as blitzes on pre-drinking, and some specific operations targeting venue lines and working with security.

FINDING 4: Further research into energy drink use is strongly recommended to validate and expand upon the current findings. Any energy drink use was found to be associated with increased experience of harm and alcohol consumption in the NTE. Energy drink use was found to exceed recommended daily intake at 11 pm across most sites. Further, despite restricting the sale of mixed alcohol-energy drinks after midnight in Perth, the levels of consumption of all variants remained similar to all other sites.

Proposal 4a: Policy trials of banning energy drink sales after 10 pm are suggested.

Proposal 4b: Discounts and promotions on AEDs should be banned in all venues.

Proposal 4c: Posters displaying information about the maximum number of energy drinks that should be consumed daily and the potential risks associated with combining alcohol and energy drink should be distributed to all venues for placement behind the bar and in the toilets.

Proposal 4d: Public education campaigns should be trialled about the potential dangers of mixing alcohol and energy drinks.

FINDING 5: Illicit drug use was found at all sites and drug use was found to significantly predict people experiencing greater violence and injury.

Proposal 5a: Funded trials of interventions such as the 'clubs against drugs' program (Gripenberg Abdon et al. 2011) are recommended.

Proposal 5b: Implementing harm reduction measures such as pill testing kits and posters in venues warning of the harms of combining alcohol and illicit drugs in night-time entertainment districts, should be considered. Venues identified as having a lot of drug use could be subject to conditions to remove flat surfaces in toilets and have their security increase surveillance of toilet areas.

FINDING 6: Almost half the people who self-reported illicit drug use produced false negative results (ie drug use was not found by the test).

Proposal 6a: Further research into the utility of drug testing devices for venue patrons is required for future research.

FINDING 7: Half of those surveyed reported that they were going to get a taxi home, indicating that focusing efforts on late-night transport infrastructure would ensure that highly intoxicated patrons left NTEs as quickly as possible.

Proposal 7a: Further tailoring of and research into transportation solutions for night-time entertainment districts is strongly recommended.

Rationale: In all the cities where data collection was conducted, major public transport infrastructure is closed during the hours when intoxication/risk of harm is at its peak. Increasing the availability and security supervision of large-scale public transport in NTEs would help remove intoxicated patrons from unsupervised streets where most assaults occurred, and would ease the strain on struggling taxi services and ranks. The best option from the available research is to align venue trading hours with public transport availability and allow patrons up to 30 minutes after venues close to use public transport. Such services would be well served by employing additional security personnel.

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All URLs were correct at February 20 2013

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